

Morning Reading 晨读

Grade 11 · AS · 十一年级 · AS

Complete Volume · 18 Weeks

Morning Reading 晨读

Grade 11 · AS · Week 1

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Physics begins with careful language. A **physical quantity** has two parts: a number, its **magnitude**, and a **unit**. Saying "the mass is 5" means nothing until you add "kilograms". Scientists across the world share the same **SI units**, so a result measured in Shanghai can be checked in London. Before an experiment, a good physicist will **estimate** the answer first, at least to the right **order of magnitude**, so a silly result is spotted at once.

Chemistry looks inside matter. Every **atom** has a tiny, dense **nucleus** of **protons** and **neutrons**, with **electrons** arranged in shells around it. The **proton number** defines the element: change it, and you have a different substance entirely.

Economics begins from one hard fact: **scarcity**. Our **wants** are unlimited, but **resources** are not. Every choice therefore has an **opportunity cost**, the next best thing you gave up. Choosing two hours of gaming costs you the two hours of revision you did not do.

Talk about it 说一说:

- 1. Estimate the mass of this worksheet, with a unit. How could you check?
- 2. What was the opportunity cost of coming to school today?

Physics

Topic 1 · Physical quantities and units

 physical quantity 物理量			
/ˈfɪzɪkl ˈkwɒntənti/			
 magnitude 大小			
/ˈmæɡnɪtjuːd/			
 unit 单位			
/ˈjuːnɪt/			
 estimate 估算			
/ˈestɪmət/			
 mass 质量			
/mæs/			
 weight 重力			
/weɪt/			
 vacuum 真空			
/ˈvækjuːm/			
 acceleration 加速度			
/əkˌseləˈreɪʃn/			
 free fall 自由落体			
/friː fɔːl/			
 order of magnitude 数量级			
/ˈɔːdə ʊv ˈmæɡnɪtjuːd/			
 SI units 国际单位制			
/ˌes ˈaɪ ˈjuːnɪts/			
 base quantity 基本量			
/beɪs ˈkwɒntənti/			
 length 长度			
/leŋθ/			
 current 电流			
/ˈkʌrənt/			
 ampere 安培			
/ˈæmpɪə/			

 temperature 温度			
/ˈtemprɪtʃə/			
 kelvin 开尔文			
/ˈkelvɪn/			
 derived unit 导出单位			
/dɪˈraɪvd ˈjuːnɪt/			
 speed 速率			
/spiːd/			
 velocity 速度			
/vəˈlɒsɪti/			

Chemistry

Topic 1 · Atomic structure

 atom 原子			
/ˈætəm/			
 nucleus 原子核			
/ˈnjuːkliəs/			
 proton 质子			
/ˈpraʊtɒn/			
 neutron 中子			
/ˈnjuːtrɒn/			
 electron 电子			
/ˈiːlektrɒn/			
 shell 壳层			
/ʃel/			
 relative charge 相对电荷			
/ˈrelatɪv tʃɑːdʒ/			
 relative mass 相对质量			
/ˈrelatɪv mæs/			
 neutral 中性			
/ˈnjuːtrəl/			
 proton number 质子数			
/ˈpraʊtɒn ˈnʌmbə/			

 atomic number 原子序数			
/ə'tomik 'namba/			
 nucleon number 核子数			
/ˈnjuːkliən 'namba/			
 mass number 质量数			
/məs 'namba/			
 nucleon 核子			
/ˈnjuːkliən/			
 ion 离子			
/aɪən/			
 electric field 电场			
/ɪ'lektrɪk fiːld/			
 deflection 偏转			
/dɪ'flekʃn/			
 atomic radius 原子半径			
/ə'tomɪk 'reɪdiəs/			
 ionic radius 离子半径			
/aɪ'ɒnɪk 'reɪdiəs/			

Biology

Topic 1 · Cell structure

 cell 细胞			
/sel/			
 microscope 显微镜			
/ˈmaɪkrəskəʊp/			
 light microscope 光学显微镜			
/laɪt 'maɪkrəskəʊp/			
 specimen 标本			
/ˈspesɪmən/			
 temporary preparation 临时装片			
/ˈtempərəri ˌprepə'reɪʃn/			
 slide 载玻片			
/slaɪd/			

 stain 染色剂			
/steɪn/			
 cover slip 盖玻片			
/ˈkʌvə slɪp/			
 magnification 放大倍数			
/ˌmæɡnɪfɪˈkeɪʃn/			
 micrometre 微米			
/ˈmaɪkrəmɪtə/			
 nanometre 纳米			
/ˌnænəʊ'miːtə/			
 chloroplast 叶绿体			
/ˈklɒrəʊplæst/			
 photomicrograph 显微照片			
/ˌfəʊtəʊ'maɪkrəgræf/			
 electron micrograph 电子显微照片			
/ɪ'lektrən 'maɪkrəgræf/			
 eyepiece graticule 目镜测微尺			
/ˈaɪpɪs 'græɪtɪkjʊəl/			
 calibrate 校准			
/ˈkælibreɪt/			
 stage micrometer 载物台测微尺			
/steɪdʒ maɪ'krɒmɪtə/			
 resolution 分辨率			
/ˌrezə'luːʃn/			
 wavelength 波长			
/ˈweɪvlɛŋθ/			
 electron microscope 电子显微镜			
/ɪ'lektrən 'maɪkrəskəʊp/			
 electron 电子			
/ɪ'lektrən/			

🔍 **scanning** 扫描
/ˈskæniŋ/

📡 **transmission** 透射
/trænˈsmɪʃn/

Mathematics

Topic 1 · Pure Mathematics 1

Σ **Pure Mathematics** 纯数学
/pjʊəˌmæθiˈmætiks/

(*) **algebra** 代数
/ˈældʒɪbrə/

∞ **calculus** 微积分
/ˈkælkjʊləs/

×² **quadratic** 二次式
/kwɒˈdrætiːk/

× **coefficient** 系数
/ˌkəʊiˈfɪjənt/

☐ **complete the square** 配方
/kəmˈplɪt ðə skweə/

△ **vertex** 顶点
/ˈvɜːteks/

√ **discriminant** 判别式
/diˈskrɪmɪnənt/

• **real roots** 实根
/riəl ruːts/

± **distinct** 相异
/diˈstɪŋkt/

Further Mathematics

Topic 1 · Further Pure Mathematics 1

Σ **Further Pure Mathematics** 进阶纯数学
/ˈfɜːðə pjʊəˌmæθiˈmætiks/

√ **roots** 根
/ruːts/

× **coefficients** 系数
/ˌkəʊiˈfɪjənts/

☐ **substitution** 代换
/ˌsʌbstɪˈtjuːʃn/

÷ **rational function** 有理函数
/ˈræʃənl ˈfʌŋkʃn/

Computer Science

Topic 1 · Information representation

☐ **number system** 数制
/ˈnʌmbə ˈsɪstəm/

☐ **denary** 十进制
/ˈdiːnəri/

☐ **binary** 二进制
/ˈbɪnəri/

☐ **byte** 字节
/baɪt/

☐ **bit** 位
/bɪt/

☐ **hexadecimal** 十六进制
/ˌheksəˈdesɪml/

digit 数位
/ˈdɪdʒɪt/

☐ **place value** 位值
/pleɪs ˈvæljuː/

 nibble 半字节			
/ˈnɪbl/			
 overflow 溢出			
/ˌəʊvəˈfləʊ/			
 register 寄存器			
/ˈredʒɪstə/			
 two's complement 补码			
/tuːz ˈkɒmplɪmənt/			
← most significant bit 最高有效位			
/məʊst sɪɡˈnɪfɪkənt bit/			
± sign bit 符号位			
/saɪn bit/			
± signed integer 有符号整数			
/saɪnd ˈɪntɪdʒə/			
+ unsigned 无符号			
/ʌnˈsaɪnd/			
 one's complement 反码			
/wʌnz ˈkɒmplɪmənt/			
 BCD 二进制十进数			
/biː siː ˈdiː/			
 7-segment display 七段显示器			
/ˈsevən ˈseɡmənt dɪˈspleɪ/			
 memory address 内存地址			
/ˈmeməri əˈdres/			
# code point 码点			
/kəʊd poɪnt/			
T character set 字符集			
/ˈkærɪktə set/			
 encoding 编码			
/enˈkəʊdɪŋ/			
 bitmap 位图			
/ˈbɪtmæp/			

 pixel 像素			
/ˈpɪksl/			
 file header 文件头			
/faɪl ˈhedə/			
 image resolution 图像分辨率			
/ˈɪmɪdʒ ˌreʒəˈluːʃn/			
 screen resolution 屏幕分辨率			
/skrɪn ˌreʒəˈluːʃn/			
 colour depth 颜色深度			
/ˈkʌlə depθ/			

Economics

Topic 1 · Basic economic ideas and resource allocation

 scarcity 稀缺性			
/ˈskeəstɪ/			
 resources 资源			
/ˈrɪˈzɔːsɪz/			
 finite 有限的			
/ˈfaɪnaɪt/			
 scarce 稀缺			
/skeəs/			
 goods 物品			
/ɡʊdz/			
 services 服务			
/ˈsɜːvɪsɪz/			
♥ wants 欲望			
/wɒnts/			
 economic problem 经济问题			
/ˌɪkəˈnɒmɪk ˈprɒbləm/			
↔ opportunity cost 机会成本			
/ɒpəˈtjuːnɪti kɒst/			

 **alternative** 替代选择
/ɒl'tɜːnətɪv/

 **consumer** 消费者
/kən'suːmə/

 **producer** 生产者
/prə'djuːsə/

 **firm** 企业
/fɜːm/

 **government** 政府
/ˈɡʌvənmənt/

 **social science** 社会科学
/ˈsəʊl̩ 'saɪəns/

Morning Reading 晨读

Grade 11 · AS · Week 2

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Scientists and economists both build models. A **model** is a simplified picture of the world that keeps the important parts and drops the rest. A map is a model: it ignores every tree, and that is exactly why it is useful. Economists add the phrase **ceteris paribus**, "all other things equal", to study one change at a time. Be careful to separate a **positive statement**, which can be tested against facts, from a **normative statement**, which contains a **value judgement** about what ought to happen.

Mathematics gives models their shape. A **quadratic equation** draws a **parabola**, the curve a thrown ball follows. A **function** is a machine: for each input from its **domain**, it returns exactly one output.

In physics the model is often an equation linking quantities: **force** in **newtons**, **energy** in **joules**, **power** in **watts**, **pressure** in **pascals**. Each unit is built from the base units, and checking them catches many mistakes.

Talk about it 说一说:

- "Petrol prices should be lower" and "petrol prices rose 5% last year": which is normative, which is positive?
- A map ignores trees. What does a distance-time graph ignore about a real journey?

Physics

Topic 1 · Physical quantities and units

→ force 力			
/fɔ:s/			
↻ newton 牛顿			
/ˈnju:tn/			
⚡ work 功			
/wɜ:k/			
⚡ energy 能量			
/ˈenədʒi/			
🔊 joule 焦耳			
/dʒu:l/			
⚡ power 功率			
/ˈpaʊə/			
💡 watt 瓦特			
/wɒt/			
⬇️ pressure 压强			
/ˈpreʃə/			
↕️ stress 应力			
/stres/			
🌀 pascal 帕斯卡			
/ˈpæskl/			
= homogeneous 量纲一致			
/ˌhɒməˈdʒiːniəs/			
✖️ prefix 词头			
/ˈpriːfiks/			
📏 measurement 测量			
/ˈmeʒəmənt/			
❓ uncertainty 不确定度			
/ʌnˈsɜːtənti/			
↗️ systematic error 系统误差			
/ˌsɪstəˈmætik ˈerə/			

🕒 zero error 零点误差			
/ˈziərəʊ ˈerə/			
🛠️ calibration 校准			
/ˌkælɪˈbreɪʃn/			
👁️ parallax 视差			
/ˈpærələeks/			
🕒 accuracy 准确度			
/ˈækjʊrəsi/			
🎯 precision 精密度			
/ˈpriːsɪʒn/			

Chemistry

Topic 1 · Atomic structure

📅 period 周期			
/ˈpiəriəd/			
⊕ nuclear charge 核电荷			
/ˈnjuːklɪə tʃɑːdʒ/			
🛡️ shielding 屏蔽			
/ˈʃiːldɪŋ/			
👥 group 族			
/gruːp/			
⊕ cation 阳离子			
/ˈkætaɪən/			
⊖ anion 阴离子			
/ˈænaɪən/			
↔️ repulsion 排斥			
/rɪˈpʌlʃn/			
🔄 isotope 同位素			
/ˈaɪsətaʊp/			
🧪 chemical properties 化学性质			
/ˈkemɪkl ˈprɒpətɪz/			

 physical properties 物理性质 <i>/ˈfɪzɪkl ˈprɒpətɪz/</i>			
 density 密度 <i>/ˈdensɪti/</i>			
# principal quantum number 主量子数 <i>/ˈprɪnsɪpl ˈkwɒntəm ˈnʌmbə/</i>			
 sub-shell 亚层 <i>/sʌb ʃel/</i>			
 orbital 轨道 <i>/ˈɔːbɪtl/</i>			
 electronic configuration 电子排布 <i>/ɪlekˈtrɒnɪk kənˌfɪɡjəˈreɪʃn/</i>			
 ground state 基态 <i>/graʊnd steɪt/</i>			
 noble gas 稀有气体 <i>/ˈnaʊbl ɡæs/</i>			
 spin 自旋 <i>/spɪn/</i>			

Biology

Topic 1 · Cell structure

 eukaryotic cell 真核细胞 <i>/juːkəriˈɒtɪk sel/</i>			
 nucleus 细胞核 <i>/ˈnjuːklɪəs/</i>			
 organelle 细胞器 <i>/ˌɔːɡəˈnel/</i>			
 cytoplasm 细胞质 <i>/ˈsaɪtəplæzəm/</i>			
 cell surface membrane 细胞膜 <i>/sel ˈsɜːfɪs ˈmembreɪn/</i>			

 nuclear envelope 核膜 <i>/ˈnjuːklɪə ˈenvələʊp/</i>			
 nucleolus 核仁 <i>/ˈnjuːklɪˈəʊləs/</i>			
 rough endoplasmic reticulum 粗面内质网 <i>/rʌf ˌendaʊˈplæzmk reˈtɪkjələm/</i>			
 protein 蛋白质 <i>/ˈpraʊtɪn/</i>			
 antibody 抗体 <i>/ˈæntɪbɒdi/</i>			
 smooth endoplasmic reticulum 滑面内质网 <i>/smuːð ˌendaʊˈplæzmk reˈtɪkjələm/</i>			
 lipid 脂质 <i>/ˈlɪpɪd/</i>			
 Golgi body 高尔基体 <i>/ˈɡolɡɪ ˈbɒdi/</i>			
 vesicle 囊泡 <i>/ˈvesɪkl/</i>			
 secretion 分泌 <i>/sɪˈkriːʃn/</i>			
 mitochondria 线粒体 <i>/ˌmaɪtəˈkɒndrɪə/</i>			
 respiration 呼吸作用 <i>/ˌrespɪˈreɪʃn/</i>			
 energy 能量 <i>/ˈenədʒi/</i>			
 ribosome 核糖体 <i>/ˈrɪˌbæʊsəʊm/</i>			
 amino acid 氨基酸 <i>/əˈmɪnəʊ ˈæsɪd/</i>			
 synthesise 合成 <i>/ˈsɪnθəsaɪz/</i>			

⦿ lysosome 溶酶体
/ˈlaɪsəsoʊm/

✂ enzyme 酶
/ˈenzaim/

Mathematics

Topic 1 · Pure Mathematics 1

= quadratic equation 二次方程
/kwoˈdrætik iˈkweɪzn/

<> quadratic inequality 二次不等式
/kwoˈdrætik iniˈkwoliti/

∩ parabola 抛物线
/pəˈræbələ/

≡ simultaneous equations 联立方程
/ˌsiməlˈteɪniəs iˈkweɪɡnz/

⇐ substitution 代入
/ˌsʌbstɪˈtjuːʃn/

f function 函数
/ˈfʌŋkʃn/

↔ domain 定义域
/dəˈmeɪn/

↕ range 值域
/reɪndʒ/

= one-one 一一对应
/wʌn wʌn/

⇌ inverse function 反函数
/ɪnˈvɜːs ˈfʌŋkʃn/

Further Mathematics

Topic 1 · Further Pure Mathematics 1

↗ oblique asymptote 斜渐近线
/əˈblik ˈæsɪmptot/

— method of differences 差分法
/ˈmeθəd ɒv ˈdɪfrənsɪz/

∞ convergent 收敛
/kənˈvɜːdʒənt/

∞ sum to infinity 无穷和
/sʌm tə ɪnˈfɪnɪti/

⌘ matrix 矩阵
/ˈmeɪtriks/

Computer Science

Topics 1–2 · Information representation, Communication

≡ bit depth 位深度
/bɪt depθ/

🖱 vector graphic 矢量图形
/ˈvektə ˈɡræfɪk/

≡ drawing list 绘图列表
/ˈdrɔːɪŋ lɪst/

⦿ primitive 图元
/ˈprɪmɪtɪv/

🖼 render 渲染
/ˈrendə/

📶 analogue data 模拟数据
/ˈænələɡ ˈdeɪtə/

📶 digital data 数字数据
/ˈdɪdʒɪtl ˈdeɪtə/

📶 sampling 采样
/ˈsæmplɪŋ/

 sampling rate 采样率			
<i>/ˈsæmplɪŋ reɪt/</i>			
 sampling resolution 采样分辨率			
<i>/ˈsæmplɪŋ ˌreʒəˈluːʃn/</i>			
 amplitude 振幅			
<i>/ˈæmplɪtjuːd/</i>			
 quantisation 量化			
<i>/ˌkwɒntaɪˈzeɪʃn/</i>			
 compression 压缩			
<i>/kəmˈpreʃn/</i>			
 bandwidth 带宽			
<i>/ˈbændwɪð/</i>			
 lossless 无损			
<i>/ˈlɒsləs/</i>			
 lossy 有损			
<i>/ˈlɒsi/</i>			
 run-length encoding 行程编码			
<i>/rʌn leŋθ enˈkəʊdɪŋ/</i>			
 dictionary methods 字典编码			
<i>/ˈdɪkʃənəri ˈmeθədz/</i>			
 Huffman coding 霍夫曼编码			
<i>/ˈhʌfmən ˈkəʊdɪŋ/</i>			
 entropy 熵			
<i>/ˈentrəpi/</i>			
 spatial 空间			
<i>/ˈspeɪʃl/</i>			
 temporal 时间			
<i>/ˈtempərəl/</i>			
 network 网络			
<i>/ˈnetwɜːk/</i>			

 local area network 局域网			
<i>/ˈləʊkl ˈeəriə ˈnetwɜːk/</i>			
 latency 延迟			
<i>/ˈleɪtənsi/</i>			
 wide area network 广域网			
<i>/waɪd ˈeəriə ˈnetwɜːk/</i>			
 server 服务器			
<i>/ˈsɜːvə/</i>			
 client 客户端			
<i>/ˈklaɪənt/</i>			
 peer-to-peer 对等网络			
<i>/piə tə piə/</i>			

Economics

Topic 1 · Basic economic ideas and resource allocation

 model 模型			
<i>/ˈmɒdl/</i>			
 ceteris paribus 其他条件不变			
<i>/ˈsetərɪs ˈpærɪbas/</i>			
 positive statement 实证表述			
<i>/ˈpɒzɪtɪv ˈsteɪtmənt/</i>			
 normative statement 规范表述			
<i>/ˈnɔːmətɪv ˈsteɪtmənt/</i>			
 value judgement 价值判断			
<i>/ˈvæljuː ˈdʒʌdʒmənt/</i>			
 microeconomics 微观经济学			
<i>/ˌmaɪkrəʊˌiːkəˈnɒmɪks/</i>			
 macroeconomics 宏观经济学			
<i>/ˌmækroʊˌiːkəˈnɒmɪks/</i>			

 output 产出 <i>/ˈaʊtpʊt/</i>			
 factors of production 生产要素 <i>/ˈfæktəz ɒv prəˈdʌkʃn/</i>			
 reward 报酬 <i>/rɪˈwɔːd/</i>			
 land 土地 <i>/lænd/</i>			
 rent 地租 <i>/rent/</i>			
 labour 劳动 <i>/ˈleɪbə/</i>			
 wages 工资 <i>/ˈweɪdʒɪz/</i>			
 capital 资本 <i>/ˈkæpɪtl/</i>			

Morning Reading 晨读

Grade 11 · AS · Week 3

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Two students measure the same pencil. One writes 14.32 cm, the other 14.29 cm. Who is right? **Accuracy** means being close to the true value; **precision** means getting almost the same reading every time. A ruler read from an angle gives a **parallax** error, and tiny hand movements cause **random error**. Repeating the measurement and taking the **mean** reduces random error. Serious laboratories also do **calibration**: they check their instruments against a known standard, and they quote a **percentage uncertainty** with every result.

Networks have their own quality measures. A **server** answers requests from many **client** machines; the delay before data starts to arrive is the **latency**. A school **local area network** connects nearby rooms, while the internet is a **wide area network** spanning the planet.

Adam Smith noticed that a pin factory with ten specialised workers made far more pins than ten generalists. **Specialisation** and the **division of labour** raise output, but workers then depend on trade with each other.

Talk about it 说一说:

1. Your three readings are 2.1 s, 2.4 s and 2.2 s. What do you report, and why?
2. Which school tasks would go faster with a division of labour? Which would not?

Physics

Topic 1 · Physical quantities and units

 random error 随机误差			
/ˈrændəm ˈerə/			
 instrument 仪器			
/ˈɪnstrəmənt/			
 mean 平均值			
/mi:n/			
 absolute uncertainty 绝对不确定度			
/ˈæbsəlu:t ənˈsɜ:tənti/			
 percentage uncertainty 百分比不确定度			
/pəˈsentɪdʒ ənˈsɜ:tənti/			
 derived quantity 导出量			
/dɪˈraɪvd ˈkwɒntənti/			
 diameter 直径			
/daɪˈæmɪtə/			
 volume 体积			
/ˈvɒljum/			
 significant figures 有效数字			
/sɪɡˈnɪfɪkənt ˈfɪɡəz/			
 scalar 标量			
/ˈskeɪlə/			
 vector 矢量			
/ˈvektə/			
 density 密度			
/ˈdensɪti/			
 electric charge 电荷			
/ɪˈlektrɪk tʃɑːdʒ/			
 displacement 位移			
/dɪˈspleɪsmənt/			
 momentum 动量			
/məʊˈmentəm/			

 coplanar 共面			
/ˈkəʊˈpleɪnə/			
 resultant 合矢量			
/rɪˈzʌltənt/			
 perpendicular 垂直			
/ˈpɜːpənˈdɪkjələ/			
 component 分量			
/kəmˈpəʊnənt/			
 horizontal 水平			
/ˈhɒrɪˈzɒntl/			

Chemistry

Topics 1–2 · Atomic structure, Atoms, molecules and stoichiometry

 sphere 球形			
/sfɪə/			
 free radical 自由基			
/friː ˈrædɪkl/			
 unpaired electrons 未成对电子			
/ʌnˈpeəd ɪˈlektrɒnz/			
 first ionisation energy 第一电离能			
/fɜːst ˌaɪənəɪˈzeɪʃn ˈenədʒi/			
 successive ionisation energies 逐级电离能			
/səkˈsesɪv ˌaɪənəɪˈzeɪʃn ˈenədʒɪz/			
 spin-pair repulsion 自旋成对排斥			
/spɪn peə rɪˈpʌljən/			
 unified atomic mass unit 统一原子质量单位			
/ˈjuːnɪfaɪd əˈtɒmɪk mæs ˈjuːnɪt/			
 relative atomic mass 相对原子质量			
/ˈrelatɪv əˈtɒmɪk mæs/			

 relative isotopic mass 相对同位素质量 <i>/ˈrelatɪv ˌaɪsoʊˈtɒpɪk məs/</i>			
 relative molecular mass 相对分子质量 <i>/ˈrelatɪv məˈlekjələ məs/</i>			
 molecule 分子 <i>/ˈmɒlɪkjʊl/</i>			
 relative formula mass 相对式量 <i>/ˈrelatɪv ˈfɔːmjələ məs/</i>			
# mole 摩尔 <i>/məʊl/</i>			
Σ Avogadro constant 阿伏伽德罗常量 <i>/ˌævəˈɡædrəʊ ˈkɒnstənt/</i>			
 molar mass 摩尔质量 <i>/ˈməʊlə məs/</i>			
 compound 化合物 <i>/ˈkɒmpaʊnd/</i>			
± ionic compound 离子化合物 <i>/aɪˈɒnɪk ˈkɒmpaʊnd/</i>			
# oxidation number 氧化数 <i>/ˌɒksɪˈdeɪʃn ˈnʌmbə/</i>			

Biology

Topics 1–2 · Cell structure, Biological molecules

 centriole 中心粒 <i>/ˈsentriəl/</i>			
 microtubule 微管 <i>/ˌmaɪkrəʊˈtjuːbjʊl/</i>			
 cilia 纤毛 <i>/ˈsɪliə/</i>			

 microvilli 微绒毛 <i>/ˈmaɪkrəʊvɪlaɪ/</i>			
 absorption 吸收 <i>/əbˈsɔːpʃn/</i>			
 photosynthesis 光合作用 <i>/ˈfəʊtəʊˈsɪnθəsɪs/</i>			
 cell wall 细胞壁 <i>/sel wɔːl/</i>			
 cellulose 纤维素 <i>/ˈseljuːləʊs/</i>			
 plasmodesmata 胞间连丝 <i>/ˌplæzməʊdˈsmɑːtə/</i>			
 vacuole 液泡 <i>/ˈvækjʊəl/</i>			
 tonoplast 液泡膜 <i>/ˈtɒnəplæst/</i>			
 prokaryotic cell 原核细胞 <i>/ˌprɒkəriˈɒtɪk sel/</i>			
 bacterium 细菌 <i>/bækˈtɪəriəm/</i>			
 unicellular 单细胞 <i>/juːnɪˈseljələ/</i>			
 peptidoglycan 肽聚糖 <i>/ˈpeptɪdɒɡlɪkən/</i>			
 virus 病毒 <i>/ˈvaɪrəs/</i>			
 non-cellular 非细胞 <i>/nɒn ˈseljələ/</i>			
 nucleic acid 核酸 <i>/njuːˈkliːk ˈæsɪd/</i>			
 capsid 衣壳 <i>/ˈkæpsɪd/</i>			
 envelope 包膜 <i>/ˈenvələʊp/</i>			

 phospholipid 磷脂			
/ˈfɒsəˌlɪpɪd/			
 host 宿主			
/həʊst/			
 molecule 分子			
/ˈmɒlɪkjʊl/			

Mathematics

Topic 1 · Pure Mathematics 1

 composition 复合			
/ˌkɒmpəˈzɪʃn/			
 reflection 反射			
/rɪˈfleksjən/			
 transformations 变换			
/trænsfɔːˈmeɪʃnz/			
 translation 平移			
/trænsˈleɪʃn/			
 stretch 伸缩			
/streɪtʃ/			
 Coordinate geometry 坐标几何			
/kəʊˈɔːdɪnət dʒiˈɒmətri/			
 gradient 斜率			
/ˈɡreɪdɪənt/			
 equation of a straight line 直线方程			
/ɪˈkweɪʃn əvə streɪt laɪn/			
 parallel 平行			
/ˈpærəlel/			
 perpendicular 垂直			
/ˌpɜːpənˈdɪkjələ/			

Further Mathematics

Topic 1 · Further Pure Mathematics 1

 zero matrix 零矩阵			
/ˈziərəʊ ˈmeɪtrɪks/			
 identity matrix 单位矩阵			
/aɪˈdɛntɪti ˈmeɪtrɪks/			
 determinant 行列式			
/dɪˈtɜːmɪnənt/			
 singular matrix 奇异矩阵			
/ˈsɪŋɡjələ ˈmeɪtrɪks/			
 inverse matrix 逆矩阵			
/ɪnˈvɜːs ˈmeɪtrɪks/			

Computer Science

Topic 2 · Communication

 thin client 瘦客户端			
/θɪn ˈklaɪənt/			
 thick client 胖客户端			
/θɪk ˈklaɪənt/			
 topology 拓扑			
/təˈpɒlədʒi/			
 bus 总线			
/bʌs/			
 star 星形			
/stɑː/			
 mesh 网状			
/meʃ/			
 fault-tolerant 容错			
/fɒlt ˈtɒlərənt/			
 cloud computing 云计算			
/klaʊd kəmˈpjʊtɪŋ/			
 scalability 可扩展性			
/ˌskeɪləˈbɪlɪti/			

 ethernet 以太网			
<i>/ˈiːθənet/</i>			
 twisted-pair 双绞线			
<i>/ˈtwɪstɪd peə/</i>			
 fibre-optic 光纤			
<i>/ˈfaɪbə ˈɒptɪk/</i>			
 network interface card 网络接口卡			
<i>/ˈnetwɜːk ˈɪntəfeɪs kɑːd/</i>			
 MAC address MAC 地址			
<i>/mæk əˈdres/</i>			
 switch 交换机			
<i>/swɪtʃ/</i>			
 hub 集线器			
<i>/hʌb/</i>			
 wireless access point 无线接入点			
<i>/ˈwaɪələs ˈæksɪs poɪnt/</i>			
 router 路由器			
<i>/ˈruːtə/</i>			
 packet 数据包			
<i>/ˈpækɪt/</i>			
 IP address IP 地址			
<i>/,aɪ ˈpiː əˈdres/</i>			
 routing table 路由表			
<i>/ˈraʊtɪŋ ˈteɪbl/</i>			
 network address translation 网络地址转换			
<i>/ˈnetwɜːk əˈdres trænzˈleɪʃn/</i>			
 DHCP 动态主机配置协议			
<i>/,diː ɛɪtʃ siː ˈpiː/</i>			
 firewall 防火墙			
<i>/ˈfaɪəwɔːl/</i>			
 collision 冲突			
<i>/kəˈlɪʒn/</i>			

 CSMA/CD 载波侦听多路访问/冲突检测			
<i>/,siː es em ˈeɪ ,siː ˈdiː/</i>			
 full-duplex 全双工			
<i>/fʊl ˈdjuːpleks/</i>			
 bit streaming 流式传输			
<i>/bɪt ˈstriːmɪŋ/</i>			
 buffer 缓冲			
<i>/ˈbʌfə/</i>			
Economics			
<i>Topic 1 · Basic economic ideas and resource allocation</i>			
 interest 利息			
<i>/ˈɪntrest/</i>			
 enterprise 企业家才能			
<i>/ˈentəpraɪz/</i>			
 profit 利润			
<i>/ˈprɒfɪt/</i>			
 non-renewable resources 不可再生资源			
<i>/nɒn rɪ ˈnjuːəbəl rɪ ˈzɔːsɪz/</i>			
 entrepreneur 企业家			
<i>/,ɒntrɪprəʊˈnjuː/</i>			
 specialisation 专业化			
<i>/speʃəlaɪˈzeɪʃn/</i>			
 division of labour 劳动分工			
<i>/dɪˈvɪʒn ɒv ˈleɪbə/</i>			
 worker 工人			
<i>/ˈwɜːkə/</i>			
 mobility 流动性			
<i>/məʊˈbɪlɪti/</i>			
 occupational mobility 职业流动性			
<i>/,ɒkjuːpeɪʃənəl məʊˈbɪlɪti/</i>			

 geographical mobility 地理流动性			
/ˌdʒɪəˈɡræfɪkl məʊˈbɪlɪti/			
 allocate 配置			
/ˈæləkeɪt/			
 market economy 市场经济			
/ˈmɑːkɪt ɪˈkɒnəmi/			
 planned economy 计划经济			
/plænd ɪˈkɒnəmi/			
 command economy 指令经济			
/kəˈmænd ɪˈkɒnəmi/			

Morning Reading 晨读

Grade 11 · AS · Week 4

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Send a message to a friend abroad and it may cross the ocean in a tenth of a second. The message is split into **packets**, each stamped with the destination **IP address**. Every **router** on the way reads the address, consults its **routing table**, and forwards the packet towards its goal. At your school's edge, a **firewall** inspects the traffic and blocks anything dangerous. No single computer controls the journey; the network finds the way by itself.

In mechanics, motion in two dimensions becomes simple when you split a vector into a horizontal and a vertical **component**. Combine forces by adding them as vectors to get the **resultant**; a moving object's mass times velocity is its **momentum**.

No real country runs on markets alone. In a **mixed economy**, the **private sector** and the **public sector** work side by side. Prices act as the **price mechanism**: a rising price is both a signal and an **incentive**, telling producers where resources are wanted.

Talk about it 说一说:

- Trace a message from your phone to a server abroad. Name each device it passes.
- Petrol prices double. What signals and incentives does this send, and to whom?

Physics

Topics 1–3 · Physical quantities and units, Kinematics, Dynamics

 vertical 竖直			
/ˈvɜːtɪkl/			
 inclined plane 斜面			
/ɪnˈklaɪnd pleɪn/			
 kinematics 运动学			
/kɪnɪˈmætiks/			
 distance 距离			
/ˈdɪstəns/			
 deceleration 减速度			
/dɪˌseləˈreɪʃn/			
 gradient 斜率			
/ˈɡreɪdɪənt/			
 tangent 切线			
/ˈtændʒənt/			
 uniform acceleration 匀加速			
/ˈjuːnɪfɔːm əkˌseləˈreɪʃn/			
 trapezium 梯形			
/trəˈpiːziəm/			
 gravity 重力			
/ˈɡrævɪti/			
 air resistance 空气阻力			
/əə ɪˈzɪstəns/			
 symmetric 对称			
/sɪˈmetrɪk/			
 light gate 光电门			
/laɪt ɡeɪt/			
 reaction-time 反应时间			
/rɪˈækʃn taɪm/			
 range 射程			
/reɪndʒ/			

 projectile 抛体			
/prəˈdʒektail/			
 linear momentum 动量			
/ˈlɪniə məʊˈmentəm/			
 resultant force 合力			
/rɪˈzʌltənt fɔːs/			
 collision 碰撞			
/kəˈlɪʒn/			
 impulse 冲量			
/ˈɪmpʌls/			

Chemistry

Topic 2 · Atoms, molecules and stoichiometry

 balanced 配平			
/ˈbælənst/			
 state symbols 状态符号			
/steɪt ˈsɪmbɪz/			
 aqueous 水溶液			
/ˈeɪkwɪəs/			
 ionic equation 离子方程式			
/aɪˈɒnɪk ɪˈkweɪʒn/			
 spectator ions 旁观离子			
/spekˈteɪtə ˈaɪənz/			
 empirical formula 实验式			
/emˈpɪrɪkl ˈfɔːmjələ/			
 molecular formula 分子式			
/məˈlekjələ ˈfɔːmjələ/			
 water of crystallisation 结晶水			
/ˈwɔːtə ɒv ˌkrɪstəlaɪˈzeɪʃn/			
 hydrated 水合的			
/haɪˈdreɪtɪd/			

 anhydrous 无水的			
/ænˈhaɪdrəs/			
 stoichiometry 化学计量			
/ˌstəʊɪkiˈɒmətri/			
% percentage yield 产率			
/pəˈsentɪdʒ jiːld/			
 limiting reagent 限量试剂			
/ˈlɪmɪtɪŋ riˈeɪdʒənt/			
+ excess reagent 过量试剂			
/ekˈses riˈeɪdʒənt/			
 hydrocarbons 碳氢化合物			
/ˈhaɪdrəˌkɑːbənz/			
 concentration 浓度			
/ˌkɒnsənˈtreɪʃn/			
 solute 溶质			
/ˈsɒljʊt/			
 solution 溶液			
/səˈluːʃn/			

Biology

Topic 2 · Biological molecules

 carbohydrate 碳水化合物			
/ˌkɑːbəʊˈhaɪdreɪt/			
 reducing sugar 还原糖			
/riˈdʒuːsɪŋ ˈjʊɡə/			
 precipitate 沉淀			
/prɪˈsɪpɪteɪt/			
 starch 淀粉			
/stɑːtʃ/			
 iodine 碘			
/ˈaɪədiːn/			
 emulsion 乳浊液			
/ɪˈmʌlʃn/			

 biuret 双缩脲			
/ˈbɪjʊːrət/			
 semi-quantitative 半定量			
/ˈsemi ˈkwɒntɪteɪtɪv/			
 standardise 标准化			
/ˈstændədaɪz/			
 concentration 浓度			
/ˌkɒnsənˈtreɪʃn/			
 non-reducing sugar 非还原糖			
/nɒn riˈdʒuːsɪŋ ˈjʊɡə/			
 hydrochloric acid 盐酸			
/ˈhaɪdrəˈklɔːrɪk ˈæsɪd/			
 neutralise 中和			
/ˈnjuːtrəlaɪz/			
 monomer 单体			
/ˈmɒnəmə/			
 polymer 聚合物			
/ˈpɒlɪmə/			
 macromolecule 大分子			
/ˈmækrəməlɪkjuːl/			
 monosaccharide 单糖			
/ˈmɒnəsækəˌraɪd/			
 glucose 葡萄糖			
/ˈgluːkaʊs/			
 disaccharide 二糖			
/ˌdɪsəkˈhɑːraɪd/			
 polysaccharide 多糖			
/ˌpɒlɪˈsækəˌraɪd/			
 fructose 果糖			
/ˈfrʌktaʊs/			
 maltose 麦芽糖			
/ˈmɒltaʊs/			
 sucrose 蔗糖			
/ˈsuːkraʊs/			

Mathematics

Topic 1 · Pure Mathematics 1

 circle 圆			
<i>/ˈsɜːkl/</i>			
• centre 圆心			
<i>/ˈsentə/</i>			
 radius 半径			
<i>/ˈreɪdiəs/</i>			
 tangent 切线			
<i>/ˈtændʒənt/</i>			
— diameter 直径			
<i>/daɪˈæmɪtə/</i>			
 radian 弧度			
<i>/ˈreɪdiən/</i>			
 arc 弧			
<i>/ɑːk/</i>			
 degrees 度			
<i>/diˈɡriːz/</i>			
 sector 扇形			
<i>/ˈsektə/</i>			
— chord 弦			
<i>/kɔːd/</i>			

Further Mathematics

Topic 1 · Further Pure Mathematics 1

 geometric transformation 几何变换			
<i>/ˌdʒiːəʊˈmetrɪk trænʃoʊˈmeɪʃn/</i>			
• invariant points 不变点			
<i>/ɪnˈveəriənt poɪnts/</i>			
— invariant lines 不变直线			
<i>/ɪnˈveəriənt laɪnz/</i>			

 polar coordinates 极坐标			
<i>ˈpəʊlə kəʊˈɔːdɪnəts/</i>			
+ Cartesian coordinates 直角坐标			
<i>/kɑːˈtɪʒiən kəʊˈɔːdɪnəts/</i>			

Computer Science

Topics 2–3 · Communication, Hardware

 internet 互联网			
<i>ˈɪntənət/</i>			
 protocol 协议			
<i>ˈprəʊtəkəl/</i>			
 World Wide Web 万维网			
<i>/wɜːld waɪd web/</i>			
 subnets 子网			
<i>ˈsʌbnets/</i>			
 subnet mask 子网掩码			
<i>ˈsʌbnɛt mæsk/</i>			
 ISP 互联网服务提供商			
<i>/aɪ es ˈpiː/</i>			
 URL 统一资源定位符			
<i>/juː ɑː ˈel/</i>			
 domain name 域名			
<i>/dəˈmeɪn neɪm/</i>			
 Domain Name System 域名系统			
<i>/dəˈmeɪn neɪm ˈsɪstəm/</i>			
 wireless network interface card 无线网络接口卡			
<i>ˈwaɪələs ˈnetwɜːk ˈɪntəfeɪs kɑːd/</i>			
 input devices 输入设备			
<i>ˈɪnpʊt dɪˈvaɪsɪz/</i>			
 output devices 输出设备			
<i>ˈaʊtpʊt dɪˈvaɪsɪz/</i>			

 primary memory 主存储器			
<i>/ˈpraɪməri 'meməri/</i>			
 processor 处理器			
<i>/ˈprəʊsesə/</i>			
 secondary storage 辅助存储器			
<i>/ˈsekəndəri 'stɔːrɪdʒ/</i>			
 embedded system 嵌入式系统			
<i>/em'bedɪd 'sɪstəm/</i>			
 firmware 固件			
<i>/ˈfɜːmweə/</i>			
 laser printer 激光打印机			
<i>/ˈleɪzə 'prɪntə/</i>			
 drum 感光鼓			
<i>/drʌm/</i>			
 toner 墨粉			
<i>/ˈtəʊnə/</i>			
 3D printer 3D 打印机			
<i>/ˌθriː 'diː 'prɪntə/</i>			
 microphone 麦克风			
<i>/ˈmaɪkrəfəʊn/</i>			
 capacitor 电容器			
<i>/kə'pæsɪtə/</i>			
 analogue-to-digital converter 模数转换器			
<i>/ˈænəlɒg tə 'dɪdʒɪtl kən'vɜːtə/</i>			
 hard disk 硬盘			
<i>/hɑːd disk/</i>			
 tracks 磁道			
<i>/træks/</i>			
 sectors 扇区			
<i>/ˈsektəz/</i>			
 read/write head 读写头			
<i>/riːd raɪt hed/</i>			

 solid-state drive 固态硬盘			
<i>/sɒlɪd steɪt draɪv/</i>			

Economics

Topic 1 · Basic economic ideas and resource allocation

 mixed economy 混合经济			
<i>/mɪkst i'kɒnəmi/</i>			
 private sector 私营部门			
<i>/ˈpraɪvət 'sektə/</i>			
 public sector 公共部门			
<i>/ˈpʌblɪk 'sektə/</i>			
 price mechanism 价格机制			
<i>/praɪs 'mekənɪzəm/</i>			
 signalling 信号传递			
<i>/ˈsɪgnəlɪŋ/</i>			
 incentive 激励			
<i>/ɪn'sentɪv/</i>			
 rationing 配给			
<i>/ˈræʃənɪŋ/</i>			
 production possibility curve 生产可能性曲线			
<i>/prə'dʌkʃn ˌpɒsə'bɪlɪti kɜːv/</i>			
 efficiency 效率			
<i>/ɪ'fɪʃənsi/</i>			
 unemployment 失业			
<i>/ʌnem'plɔɪmənt/</i>			
 trade-off 取舍			
<i>/treɪd ɒf/</i>			
 economic growth 经济增长			
<i>/ˌiːkə'nɒmɪk grəʊθ/</i>			
 technology 技术			
<i>/tek'nɒlədʒi/</i>			

📉 economic decline 经济衰退

/ˌiːkəˈnɒmɪk dɪˈklaɪn/

🏢 capital goods 资本品

/'kæpɪtl ɡʊdz/

Morning Reading 晨读

Grade 11 · AS · Week 5

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Who pays for the streetlight? When it shines, it shines for everyone: my using it takes nothing from you. Economists call this **non-rivalry**. And nobody can be stopped from using it: **non-excludability**. Goods with both properties are **public goods**, and they create the **free-rider problem**: since people benefit without paying, no private firm wants to supply them. That is why street lighting and **national defence** are paid for by the state. A **merit good** like education is different: markets do supply it, but less than society would like.

Meanwhile, tiny computers hide all around you. An **embedded system** is a small computer inside another machine: a rice cooker, a lift, a traffic light. Its program, the **firmware**, is written once into memory. It reads a **sensor**, decides, and acts, millions of times without a screen or keyboard.

In mechanics, a thrown basketball is a **projectile**: gravity curves its path into a parabola. When two players collide, the total momentum just before equals the total just after; each **collision** obeys this law.

Talk about it 说一说:

1. Is a park a public good? Test it: non-rivalry, non-excludability.
2. Count the embedded systems you met before school this morning.

Physics

Topics 2–3 · Kinematics, Dynamics

 kinetic energy 动能			
<i>/kiˈnetɪk ˈenədʒi/</i>			
 external force 外力			
<i>/ekˈstɜːnl fɔːs/</i>			
 electrostatic 静电			
<i>/ɪˌlektroʊˈstætɪk/</i>			
 normal contact force 支持力			
<i>ˈnɔːml ˈkɒntækt fɔːs/</i>			
 thrust 推力			
<i>/θrʌst/</i>			
 gravitational field 重力场			
<i>/ˌgrævɪˈteɪʃənl fiːld/</i>			
 friction 摩擦力			
<i>ˈfrɪkʃn/</i>			
 viscous 黏性			
<i>ˈvɪskəs/</i>			
 drag 阻力			
<i>/dræg/</i>			
 fluid 流体			
<i>ˈfluːɪd/</i>			
 coefficient 系数			
<i>/ˌkəʊˈfɪʃənt/</i>			
 terminal velocity 收尾速度			
<i>ˈtɜːmɪnl vəˈləsɪti/</i>			
 parachutist 跳伞者			
<i>ˈpærəʃuːtɪst/</i>			
 gravitational potential energy 重力势能			
<i>/ˌgrævɪˈteɪʃənl pəˈtenʃl ˈenədʒi/</i>			

 thermal energy 热能			
<i>ˈθɜːml ˈenədʒi/</i>			
 conservation of momentum 动量守恒			
<i>/kɒnsəˈveɪʃn ɒv məʊˈmentəm/</i>			
 explosion 爆炸			
<i>/ekˈspləʊʒn/</i>			
 recoil 反冲			
<i>/rɪˈkɔɪl/</i>			
 elastic collision 弹性碰撞			
<i>/ɪˈlæstɪk kəˈlɪʒn/</i>			
 relative speed 相对速率			
<i>ˈrelatɪv spiːd/</i>			

Chemistry

Topics 2–3 · Atoms, molecules and stoichiometry, Chemical bonding

 titration 滴定			
<i>ˈtaɪˈtreɪʃn/</i>			
 significant figures 有效数字			
<i>/sɪɡˈnɪfɪkənt ˈfɪɡəz/</i>			
 electronegativity 电负性			
<i>/ɪˌlektroʊɡəˈtɪvɪti/</i>			
 Pauling electronegativity 鲍林电负性			
<i>ˈpɔːlɪŋ ɪˌlektroʊɡəˈtɪvɪti/</i>			
 ionic bonding 离子键			
<i>/aɪˈɒnɪk ˈbɒndɪŋ/</i>			
 electrostatic attraction 静电引力			
<i>/ɪˌlektroʊˈstætɪk əˈtrækʃn/</i>			
 lattice 晶格			
<i>ˈlætɪs/</i>			
 metallic bonding 金属键			
<i>/məˈtælɪk ˈbɒndɪŋ/</i>			

 delocalised electrons 离域电子 <i>/di'lokəlaɪzd t'lektɒnz/</i>			
 covalent bonding 共价键 <i>/'kəʊvələnt 'bɒdɪŋ/</i>			
 expand the octet 扩展八隅体 <i>/ek'spænd ðɪ ɒk'tet/</i>			
 coordinate bond 配位键 <i>/'kəʊɔːdɪnət bɒnd/</i>			
 sigma bond σ 键 <i>/'sɪgmə bɒnd/</i>			
 overlap 重叠 <i>/'əʊvə'leɪp/</i>			
 pi bond π 键 <i>/'paɪ bɒnd/</i>			
 hybridisation 杂化 <i>/'haɪbrɪdaɪ'zeɪʃn/</i>			
 bond energy 键能 <i>/'bɒnd 'enədʒi/</i>			
 bond length 键长 <i>/'bɒnd leŋθ/</i>			

Biology

Topic 2 · Biological molecules

 covalent bond 共价键 <i>/'kəʊvələnt bɒnd/</i>			
 glycosidic bond 糖苷键 <i>/'glʌɪkə'sɪdɪk bɒnd/</i>			
 condensation 缩合 <i>/'kɒndən'seɪʃn/</i>			
 hydrolysis 水解 <i>/'haɪ'drɒləsɪs/</i>			

 amylose 直链淀粉 <i>/'æmɪləʊs/</i>			
 amylopectin 支链淀粉 <i>/'æmɪləʊpɛktɪn/</i>			
 glycogen 糖原 <i>/'glʌɪkədʒɪn/</i>			
 insoluble 不溶 <i>/'ɪnsəljubl/</i>			
 water potential 水势 <i>/'wɔːtə pə'tenʃl/</i>			
 osmosis 渗透 <i>/'ɒz'məʊsɪs/</i>			
 hydrogen bond 氢键 <i>/'haɪdrədʒn bɒnd/</i>			
 microfibril 微纤丝 <i>/'maɪkrəʊfɪbrəl/</i>			
 triglyceride 甘油三酯 <i>/'trɪglɪsəraɪd/</i>			
 non-polar 非极性 <i>/'nɒn 'pəʊlə/</i>			
 hydrophobic 疏水 <i>/'haɪdrə'fəʊbɪk/</i>			
 glycerol 甘油 <i>/'glɪsərəl/</i>			
 fatty acid 脂肪酸 <i>/'fæti 'æsɪd/</i>			
 ester bond 酯键 <i>/'estə bɒnd/</i>			
 saturated 饱和 <i>/'sætʃəreɪtɪd/</i>			
 double bond 双键 <i>/'dʌbl bɒnd/</i>			
 unsaturated 不饱和 <i>/'ʌn'sætʃəreɪtɪd/</i>			

 **insulation** 隔热
/ˌɪnsjuːˈleɪʃn/

 **phosphate** 磷酸
/ˈfɒsfeɪt/

Mathematics

Topic 1 · Pure Mathematics 1

 **segment** 弓形
/ˈseɡmənt/

 **sine** 正弦
/saɪn/

 **cosine** 余弦
/ˈkɒsaɪn/

 **tangent function** 正切
/ˈtændʒənt ˈfʌŋkʃn/

 **principal value** 主值
/ˈprɪnsɪpl ˈvæljuː/

 **identity** 恒等式
/aɪˈdentɪti/

 **trigonometric equation**
三角方程
/ˌtrɪɡənəʊˈmetrɪk ɪˈkweɪʃn/

 **binomial expansion** 二项
展开式
/baɪˈnəʊmɪəl ekˈspænjən/

 **binomial coefficient** 二项
式系数
/baɪˈnəʊmɪəl ˌkəʊˈfɪʃənt/

 **progression** 数列
/prəˈɡreʃn/

Further Mathematics

Topic 1 · Further Pure Mathematics 1

 **polar curves** 极坐标曲线
/ˈpəʊlə kɜːvz/

 **plane** 平面
/pleɪn/

 **vector product** 向量积
/ˈvektə ˈprɒdʌkt/

 **vectors** 向量
/ˈvektəz/

 **skew lines** 异面直线
/skjuː ˈlaɪnz/

Computer Science

Topics 3-4 · Hardware, Processor Fundamentals

 **transistors** 晶体管
/ˈtrænˈzɪstəz/

 **optical disc** 光盘
/ˈɒptɪkl dɪsk/

 **touchscreen** 触摸屏
/ˈtʌtʃskriːn/

 **resistive** 电阻式
/rɪˈzɪstɪv/

 **capacitive** 电容式
/kəˈpæsɪtɪv/

 **virtual reality** 虚拟现实
/ˈvɜːtʃʊəl rɪˈælɪti/

 **accelerometer** 加速度计
/əkˌselsəˈrɒmɪtə/

 **gyroscope** 陀螺仪
/ˈdʒaɪrəskəʊp/

 **RAM** 随机存取存储器
/ræm/

 volatile 易失性	_____	_____	_____
/ˈvɒlətaɪl/			
 ROM 只读存储器	_____	_____	_____
/rɒm/			
 non-volatile 非易失性	_____	_____	_____
/nɒn 'vɒlətaɪl/			
 SRAM 静态	_____	_____	_____
/ˈesræm/			
 flip-flop 触发器	_____	_____	_____
/flɪp flɒp/			
 cache 高速缓存	_____	_____	_____
/kæʃ/			
 DRAM 动态	_____	_____	_____
/ˈdiːræm/			
 refreshed 刷新	_____	_____	_____
/rɪˈfreʃt/			
 monitoring 监控	_____	_____	_____
/ˈmɒnɪtərɪŋ/			
 control system 控制系统	_____	_____	_____
/kənˈtrəʊl 'sɪstəm/			
 sensor 传感器	_____	_____	_____
/ˈsensə/			
 thermistor 热敏电阻	_____	_____	_____
/ˈθɜːmɪstə/			
 actuator 执行器	_____	_____	_____
/ˈæktʃuːətə/			
 feedback 反馈	_____	_____	_____
/ˈfiːdbæk/			
 logic gate 逻辑门	_____	_____	_____
/ˈlɒdʒɪk geɪt/			
 Boolean 布尔	_____	_____	_____
/ˈbuːliən/			
 truth table 真值表	_____	_____	_____
/truːθ 'teɪbl/			

 logic circuit 逻辑电路	_____	_____	_____
/ˈlɒdʒɪk 'sɜːkɪt/			
 Von Neumann architecture 冯·诺依曼体系结构	_____	_____	_____
/vɒn 'noɪmən 'ɑːkɪtektʃə/			
Economics			
<i>Topics 1–2 · Basic economic ideas and resource allocation, The price system and the microeconomy</i>			
 consumer goods 消费品	_____	_____	_____
/kən'suːmə ɡɒdz/			
 free good 免费物品	_____	_____	_____
/friː ɡɒd/			
 economic good 经济物品	_____	_____	_____
/ˌiːkə'nɒmɪk ɡɒd/			
 private good 私人物品	_____	_____	_____
/ˈpraɪvət ɡɒd/			
 rivalry 竞争性	_____	_____	_____
/ˈraɪvəlri/			
 excludability 排他性	_____	_____	_____
/eksˌkluːdə'bɪlɪti/			
 public good 公共物品	_____	_____	_____
/ˈpʌblɪk ɡɒd/			
 non-rivalry 非竞争性	_____	_____	_____
/nɒn 'raɪvəlri/			
 non-excludability 非排他性	_____	_____	_____
/nɒn eksˌkluːdə'bɪlɪti/			
 free-rider problem 搭便车问题	_____	_____	_____
/friː 'raɪdə 'prɒbləm/			
 national defence 国防	_____	_____	_____
/ˈnæʃənəl dɪ'fens/			

 merit good 优值品			
/ˈmerɪt ɡɒd/			
 demerit good 劣值品			
/ˈdemərɪt ɡɒd/			
 information failure 信息 失灵			
/ˌɪnfəˈmeɪʃn ˈfeɪlɪə/			
 demand 需求			
/dɪˈmænd/			

Morning Reading 晨读

Grade 11 · AS · Week 6

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

A skydiver 跳伞员 steps out of the plane. At first she accelerates: gravity wins. But as she speeds up, air resistance grows, until it exactly balances her weight. From then on she falls at a steady **terminal velocity**. Opening the parachute increases the air resistance enormously, so she slows to a new, safe terminal velocity. When she lands softly, bending her knees, she is using **deformation** to extend the stopping time and reduce the force.

Computers make a similar trade between speed and safety. **RAM** is fast but **volatile**: switch off the power and everything in it is gone. **ROM** is **non-volatile**, keeping its contents forever, so the start-up program lives there. The **cache** keeps the busiest data closest to the processor.

Why does the third slice of pizza taste worse than the first? Economists say the extra satisfaction from each unit, the **marginal utility**, falls as you consume more. This law of **diminishing marginal utility** helps explain why the **demand curve** slopes downwards.

Talk about it 说一说:

1. Why does a parachute have to be large? Explain using forces.
2. Give your own example of diminishing marginal utility from this week.

Physics

Topics 3-4 · Dynamics, Forces, density and pressure

 inelastic collision 非弹性碰撞			
<i>/ɪnɪˈlæstɪk kəˈlɪʒn/</i>			
 deformation 形变			
<i>/ˌdiːfɔːˈmeɪʃn/</i>			
 head-on 正面			
<i>/hed ɒn/</i>			
 stationary 静止			
<i>/ˈsteɪʃənəri/</i>			
 mass-flow rate 质量流率			
<i>/mæs fləʊ reɪt/</i>			
 centre of gravity 重心			
<i>/ˈsentə ɒv ˈɡrævɪti/</i>			
 centre of mass 质心			
<i>/ˈsentə ɒv mæs/</i>			
 free-body diagram 受力图			
<i>/friː ˈbɒdi ˈdaɪəɡræm/</i>			
 moment 力矩			
<i>/ˈməʊmənt/</i>			
 perpendicular distance 垂直距离			
<i>/pɜːpənˈdɪkjələ ˈdɪstəns/</i>			
 line of action 作用线			
<i>/laɪn ɒv ˈækʃn/</i>			
 lever arm 力臂			
<i>/ˈliːvə ɑːm/</i>			
 pivot 支点			
<i>/ˈpɪvət/</i>			
 clockwise 顺时针			
<i>/ˈklɒkwaɪz/</i>			

 anticlockwise 逆时针			
<i>/ˌæntɪˈklɒkwaɪz/</i>			
 couple 力偶			
<i>/ˈkʌpl/</i>			
 torque 力偶矩			
<i>/tɔːk/</i>			
 translation 平动			
<i>/trænzˈleɪʃn/</i>			
 equilibrium 平衡			
<i>/ˌɪkwɪˈlɪbrɪəm/</i>			
 angular acceleration 角加速度			
<i>/ˈæŋɡjələ əkˌselsəˈreɪʃn/</i>			

Chemistry

Topic 3 · Chemical bonding

 VSEPR theory 价层电子对互斥理论			
<i>/ˈvespə ˈθiəri/</i>			
 lone pair 孤对电子			
<i>/ləʊn peə/</i>			
 bonding pair 成键电子对			
<i>/ˈbɒndɪŋ peə/</i>			
 bond angle 键角			
<i>/bɒnd ˈæŋɡl/</i>			
 linear 直线形			
<i>/ˈliːniə/</i>			
 trigonal planar 平面三角形			
<i>/ˈtrɪɡənɪ ˈpleɪnə/</i>			
 tetrahedral 四面体形			
<i>/ˈtetrəˈhiːdrəl/</i>			
 pyramidal 三角锥形			
<i>/pɪˈræmɪdl/</i>			

 bent 角形 <i>/bent/</i>			
 trigonal bipyramidal 三角双锥形 <i>/ˈtrɪɡənl baɪˈpɪrəmiːdl/</i>			
 octahedral 八面体形 <i>/ˌɒktəˈhiːdrəl/</i>			
 intermolecular forces 分子间作用力 <i>/ˌɪntəməˈleɪkjələ ˈfɔːsɪz/</i>			
 polarity 极性 <i>/pəʊˈlærɪti/</i>			
 dipole 偶极 <i>/ˈdaɪpəʊl/</i>			
 dipole moment 偶极矩 <i>/ˈdaɪpəʊl ˈməʊmənt/</i>			
 van der Waals' forces 范德华力 <i>/ˈvændsː wəːlz ˈfɔːsɪz/</i>			
 London dispersion forces 伦敦色散力 <i>/ˈlʌndn dɪˈspɜːʃn ˈfɔːsɪz/</i>			
 instantaneous dipole 瞬时偶极 <i>/ˌɪnstənˈteɪniəs ˈdaɪpəʊl/</i>			

Biology

Topic 2 · Biological molecules

 hydrophilic 亲水 <i>/ˌhaɪdrəˈfɪlɪk/</i>			
 polar 极性 <i>/ˈpəʊlə/</i>			
 amino group 氨基 <i>/əˈmiːnəʊ grʊːp/</i>			

 carboxyl group 羧基 <i>/ˈkɑːbəksɪl grʊːp/</i>			
 side chain 侧链 <i>/saɪd tʃeɪn/</i>			
 peptide bond 肽键 <i>/ˈpeptaid bɒnd/</i>			
 polypeptide 多肽 <i>/ˌpɒlɪˈpeptaid/</i>			
 primary structure 一级结构 <i>/ˈpraɪməri ˈstrʌktʃə/</i>			
 secondary structure 二级结构 <i>/ˈsekəndəri ˈstrʌktʃə/</i>			
 helix 螺旋 <i>/ˈhiːlɪks/</i>			
 pleated sheet 折叠片 <i>/ˈpliːtɪd ʃiːt/</i>			
 tertiary structure 三级结构 <i>/ˈtɜːʃjəri ˈstrʌktʃə/</i>			
 quaternary structure 四级结构 <i>/kwəˈtɜːnəri ˈstrʌktʃə/</i>			
 hydrophobic interactions 疏水作用 <i>/ˌhaɪdrəˈfəʊbɪk ɪntəˈrækʃnz/</i>			
 ionic bond 离子键 <i>/aɪˈɒnɪk bɒnd/</i>			
 disulfide bond 二硫键 <i>/ˈdaɪsʌlfʌɪd bɒnd/</i>			
 globular protein 球状蛋白质 <i>/ˈɡləʊbjələ ˈprəʊtiːn/</i>			
 soluble 可溶 <i>/ˈsɒljʊəbl/</i>			

 fibrous protein 纤维状蛋白质			
/ˈfɪbrəs ˈprəʊtiːn/			
 haemoglobin 血红蛋白			
/hiːməˈgləʊbɪn/			
 oxygen 氧气			
/ˈɒksɪdʒɪn/			
 haem group 血红素			
/hiːm ɡruːp/			
 iron 铁			
/ˈaɪən/			

Mathematics

Topic 1 · Pure Mathematics 1

 arithmetic progression 等差数列			
/əˈrɪθmətik prəˈɡreʃn/			
 common difference 公差			
/ˈkɒmən ˈdɪfrəns/			
 term 项			
/tɜːm/			
 geometric progression 等比数列			
/ˌdʒiːəʊˈmetrɪk prəˈɡreʃn/			
 common ratio 公比			
/ˈkɒmən ˈreɪʃiəʊ/			
 converges 收敛			
/kənˈvɜːdʒɪz/			
 sum to infinity 无穷和			
/sʌm tu ɪnˈfɪnɪti/			
 Differentiation 微分			
/ˌdɪfəˈrenʃiˈeɪʃn/			
 gradient of a curve 曲线斜率			
/ˈɡreɪdɪənt əvə kɜːv/			

 limit 极限			
/ˈlɪmɪt/			

Further Mathematics

Topic 1 · Further Pure Mathematics 1

 mathematical induction 数学归纳法			
/ˌmæθɪˈmætiːkl ɪnˈdʌkʃn/			
 conjecture 猜想			
/kənˈdʒektʃə/			
 inductive proof 归纳证明			
/ɪnˈdʌktɪv pruːf/			
 symmetric functions 对称函数			
/sɪˈmetrɪk ˈfʌŋkʃnz/			
 discriminant 判别式			
/dɪˈskrɪmɪnənt/			

Computer Science

Topics 3-4 · Hardware, Processor Fundamentals

 stored program 存储程序			
/stɔːd ˈprəʊɡræm/			
 arithmetic and logic unit 算术逻辑单元			
/ˌæriθˈmetɪk ənd ˈlɒdʒɪk ˈjuːnɪt/			
 control unit 控制单元			
/kənˈtrəʊl ˈjuːnɪt/			
 clock speed 时钟频率			
/klɒk spiːd/			
 Program Counter 程序计数器			
/ˈprəʊɡræm ˈkaʊntə/			
 Memory Address Register 内存地址寄存器			
/ˈmeməri əˈdres ˈredʒɪstə/			

 Memory Data Register 内存数据寄存器 <i>/ˈmeməri ˈdeɪtə ˈredʒɪstə/</i>			
 Current Instruction Register 当前指令寄存器 <i>/ˈkʌrənt ɪnˈstrʌkʃn ˈredʒɪstə/</i>			
+ accumulator 累加器 <i>/əˈkju:mjələɪtə/</i>			
 Status Register 状态寄存器 <i>/ˈsteɪtəs ˈredʒɪstə/</i>			
 flags 标志 <i>/flægz/</i>			
# Index Register 变址寄存器 <i>/ˈɪndeks ˈredʒɪstə/</i>			
 general-purpose registers 通用寄存器 <i>/ˈdʒenərəl ˈpɜ:pəs ˈredʒɪstəz/</i>			
 buses 总线 <i>/ˈbʌsɪz/</i>			
 address bus 地址总线 <i>/əˈdres bʌs/</i>			
 data bus 数据总线 <i>/ˈdeɪtə bʌs/</i>			
 control bus 控制总线 <i>/kənˈtrəʊl bʌs/</i>			
 cores 核心 <i>/kəʊz/</i>			
 word size 字长 <i>/wɜ:d saɪz/</i>			
 page 页 <i>/peɪdʒ/</i>			
 port 端口 <i>/pɔ:t/</i>			

 peripheral 外围设备 <i>/pəˈrɪfərəl/</i>			
 fetch-execute cycle 取指-执行周期 <i>/fetʃˈeksɪkjʊt ˈsaɪkl/</i>			
 interrupt 中断 <i>/ˈɪntəɹəpt/</i>			
 interrupt service routine 中断服务程序 <i>/ˈɪntəɹəpt ˈsɜ:vɪs ruːˈti:n/</i>			
 machine code 机器码 <i>/məˈʃi:n kəʊd/</i>			
 assembly language 汇编语言 <i>/əˈsembli ˈlæŋɡwɪdʒ/</i>			
T mnemonics 助记符 <i>/niˈmɒnɪks/</i>			
Economics			
<i>Topic 2 · The price system and the microeconomy</i>			
 price 价格 <i>/praɪs/</i>			
# quantity demanded 需求量 <i>/ˈkwɒntəti dɪˈmændɪd/</i>			
 demand curve 需求曲线 <i>/dɪˈmænd kɜ:v/</i>			
 shift 移动 <i>/ʃɪft/</i>			
 determinants 决定因素 <i>/dɪˈtɜ:mɪnənts/</i>			
 income 收入 <i>/ˈɪŋkəm/</i>			
 substitute 替代品 <i>/ˈsʌbstɪtju:t/</i>			

🧩 **complement** 互补品
/ˈkɒmplɪmənt/

👤 **market demand** 市场需求
/ˈmɑːkɪt dɪˈmænd/

😊 **utility** 效用
/juːˈtɪlɪti/

➕ **marginal utility** 边际效用
/ˈmɑːdʒɪnəl juːˈtɪlɪti/

↘ **diminishing marginal utility** 边际效用递减
/dɪˈmɪnɪʃɪŋ ˈmɑːdʒɪnəl juːˈtɪlɪti/

📦 **supply** 供给
/səˈplaɪ/

quantity supplied 供给量
/ˈkwɒntəntɪ səˈplaɪd/

↗ **supply curve** 供给曲线
/səˈplaɪ kɜːv/

Morning Reading 晨读

Grade 11 · AS · Week 7

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Why is the door handle far from the hinge? Because a force turns an object more easily when it acts far from the **pivot**. The turning effect, the **moment**, equals the force times the **perpendicular distance** from the pivot to its **line of action**. Scissors, spanners and wheelbarrows are all machines built around this idea. Two equal and opposite forces that do not share a line form a **couple**, producing pure rotation, which is how you turn a steering wheel. A body at rest with no net force and no net moment is in **equilibrium**.

Inside the processor, special registers keep order. The **Program Counter** holds the address of the next instruction; the **Accumulator** holds the value being worked on. Instructions and data travel on the **address bus** and **data bus**, and the **clock speed** sets the rhythm.

Back in economics: if the metro fare rises 10% and passenger numbers barely change, demand is **inelastic**, and the operator's **total revenue** rises. For a **luxury** with many alternatives, the same rise would drive customers away.

Talk about it 说一说:

1. Why is it easier to open a door by pushing its edge, not its middle?
2. Metro fares rise 10%. Predict what happens to revenue, and explain.

Physics

Topics 1–5 · Physical quantities and units, Dynamics, Forces, density and pressure, Work, energy and power

 principle of moments 力矩原理			
<i>/ˈprɪnsɪpl əv ˈməʊmənts/</i>			
 vector triangle 矢量三角形			
<i>/ˈvektə ˈtraɪæŋɡl/</i>			
 sine rule 正弦定理			
<i>/saɪn ruːl/</i>			
 cosine rule 余弦定理			
<i>/ˈkəʊsaɪn ruːl/</i>			
 cross-sectional area 横截面积			
<i>/krɒs ˈsekʃənəl ˈeəriə/</i>			
 hydrostatic pressure 流体静压强			
<i>/ˌhaɪdraʊˈstætɪk ˈpreʃə/</i>			
 depth 深度			
<i>/depθ/</i>			
 atmospheric pressure 大气压强			
<i>/ˌætməˈsferɪk ˈpreʃə/</i>			
 submerged 浸没			
<i>/səbˈmɜːdʒd/</i>			
 upthrust 浮力			
<i>/ˈʌpθrʌst/</i>			
 displaced 排开			
<i>/dɪˈspleɪst/</i>			
 Archimedes' principle 阿基米德原理			
<i>/ˌɑːkɪˈmiːdiːz ˈprɪnsɪpl/</i>			
 floating 漂浮			
<i>/ˈflaʊtɪŋ/</i>			

 tension 张力			
<i>/ˈtenʃn/</i>			
 newton meter 弹簧测力计			
<i>/ˈnjuːtn ˈmiːtə/</i>			
 incompressible 不可压缩			
<i>/ˌɪnkəmˈpresəbl/</i>			
 closed system 封闭系统			
<i>/ˈkləʊzd ˈsɪstəm/</i>			
 conservation of energy 能量守恒			
<i>/ˌkɒnsəˈveɪʃn əv ˈenədʒi/</i>			
 elastic potential energy 弹性势能			
<i>/ˌlæstɪk pəˈtenʃl ˈenədʒi/</i>			
 electrical energy 电能			
<i>/ˌɪlektrɪkl ˈenədʒi/</i>			

Chemistry

Topics 3–4 · Chemical bonding, States of matter

 induced dipole 诱导偶极			
<i>/ɪnˈdʒuːst ˈdaɪpəʊl/</i>			
 permanent dipole 永久偶极			
<i>/ˈpɜːmənənt ˈdaɪpəʊl/</i>			
 hydrogen bonding 氢键			
<i>/ˈhaɪdrədʒn ˈbɒndɪŋ/</i>			
 boiling point 沸点			
<i>/ˈbɔɪlɪŋ poɪnt/</i>			
 surface tension 表面张力			
<i>/ˈsɜːfɪs ˈtenʃn/</i>			
 dot-and-cross diagram 点叉图			
<i>/ˌdɒt ænd krɒs ˈdaɪəgræm/</i>			
 collide 碰撞			
<i>/kəˈlaɪd/</i>			

 pressure 压强			
/ˈpreʃə/			
 ideal gas 理想气体			
/aɪˈdɪəl ɡæs/			
 real gas 实际气体			
/rɪəl ɡæs/			
 ideal gas equation 理想气体方程			
/aɪˈdɪəl ɡæs iˈkweɪʃn/			
 kelvin 开尔文			
/ˈkelvɪn/			
 gas constant 气体常量			
/ɡæs ˈkɒnstənt/			
 crystalline solid 晶体			
/ˈkrɪstəlaɪn ˈsɒlɪd/			
 giant ionic 离子晶体			
/ˈdʒaɪənt aɪˈɒnɪk/			
 simple molecular 分子晶体			
/ˈsɪmpl məˈleɪkjələ/			
 fullerene 富勒烯			
/ˈfʊləren/			
 giant molecular 原子晶体			
/ˈdʒaɪənt məˈleɪkjələ/			

Biology

Topics 2–3 · Biological molecules, Enzymes

 collagen 胶原蛋白			
/ˈkɒlədʒɪn/			
 tendon 肌腱			
/ˈtendn/			
 fibre 纤维			
/ˈfaɪbə/			

 solvent 溶剂			
/ˈsɒlvənt/			
 specific heat capacity 比热容			
/spəˈsɪfɪk hi:t kəˈpæsɪti/			
 latent heat of vaporisation 汽化潜热			
/ˈleɪtənt hi:t ɒv ˌveɪpəraɪˈzeɪʃn/			
 evaporate 蒸发			
/ɪˈvæpəreɪt/			
 catalyse 催化			
/ˈkætəlaɪz/			
 intracellular 细胞内			
/ɪntrəˈseljələ/			
 catalase 过氧化氢酶			
/ˈkætəleɪz/			
 extracellular 细胞外			
/ɛkstrəˈseljələ/			
 secrete 分泌			
/sɪˈkri:t/			
 amylase 淀粉酶			
/ˈæmɪleɪz/			
 digest 消化			
/ˈdaɪdʒest/			
 active site 活性位点			
/ˈæktɪv saɪt/			
 substrate 底物			
/ˈsʌbstreɪt/			
 enzyme-substrate complex 酶底物复合物			
/ˈenzaim ˈsʌbstreɪt ˈkɒmpleks/			
 product 产物			
/ˈprɒdʌkt/			
 complementary 互补			
/ˈkɒmplɪˈmentəri/			

 specificity 专一性			
/ˌspeʃɪˈfɪsɪti/			
 lock-and-key hypothesis 锁钥学说			
/lɒk ænd kiː haɪˈpoθəsis/			
 induced-fit hypothesis 诱导契合学说			
/ɪnˈdʒʊst fɪt haɪˈpoθəsis/			
 activation energy 活化能			
/ˌæktɪˈveɪʃn ˈenədʒi/			

Mathematics

Topic 1 · Pure Mathematics 1

 derivative 导数			
/dɪˈrɪvətɪv/			
 chain rule 链式法则			
/tʃeɪn ruːl/			
 second derivative 二阶导数			
/ˈsekənd dɪˈrɪvətɪv/			
 normal 法线			
/ˈnɔːml/			
 increasing function 增函数			
/ɪnˈkriːsɪŋ ˈfʌŋkʃn/			
 decreasing function 减函数			
/dɪkriːsɪŋ ˈfʌŋkʃn/			
 rate of change 变化率			
/reɪt ɒv tʃeɪndʒ/			
 stationary point 驻点			
/ˈsteɪʃənəri poɪnt/			
 minimum point 极小值点			
/ˈmɪnɪməm poɪnt/			

 maximum point 极大值点			
/ˈmæksɪməm poɪnt/			

Further Mathematics

Topic 1 · Further Pure Mathematics 1

 turning points 驻点			
/ˈtʜːnɪŋ poɪnts/			
 partial fractions 部分分式			
/ˈpɑːʃl ˈfræʃjnz/			
 rotation 旋转			
/rəʊˈteɪʃn/			
 reflection 反射			
/rɪˈflekʃn/			
 enlargement 放大			
/enˈlɑːdʒmənt/			

Computer Science

Topics 4–5 · Processor Fundamentals, System Software

 assembler 汇编器			
/əˈsemblə/			
 symbol table 符号表			
/ˈsɪmbəl ˈteɪbl/			
 label 标签			
/ˈleɪbl/			
 forward references 前向引用			
/ˈfɔːwəd ˈrefrənsɪz/			
 addressing mode 寻址方式			
/əˈdresɪŋ məʊd/			
 immediate addressing 立即寻址			
/ɪˈmɪdiət əˈdresɪŋ/			

 direct addressing 直接寻址 <i>/daɪ'rekt ə'dresɪŋ/</i>			
 indirect addressing 间接寻址 <i>/ɪndaɪ'rekt ə'dresɪŋ/</i>			
# indexed addressing 变址寻址 <i>/ɪndekst ə'dresɪŋ/</i>			
→ relative addressing 相对寻址 <i>/rələtɪv ə'dresɪŋ/</i>			
» logical shift 逻辑移位 <i>/lɒdʒɪkl ʃɪft/</i>			
 mask 掩码 <i>/mæsk/</i>			
 cache memory 高速缓存 <i>/kæʃ'meməri/</i>			
 Immediate Access Store 立即存取存储器 <i>/ɪ'mi:diət 'ækses stɔ:/</i>			
 special purpose registers 专用寄存器 <i>/speʃl 'pɜ:pəs 'redʒɪstəz/</i>			
 register transfer 寄存器传送 <i>/redʒɪstə 'trænsfɜ:/</i>			
 cyclic shift 循环移位 <i>/saɪklɪk ʃɪft/</i>			
 operating system 操作系统 <i>/ɒpəreɪtɪŋ 'sɪstəm/</i>			
 process management 进程管理 <i>/prəuses'mænɪdʒmənt/</i>			
 process 进程 <i>/prəuses/</i>			

 memory management 内存管理 <i>/meməri'mænɪdʒmənt/</i>			
 virtual memory 虚拟内存 <i>/vɜ:tʃuəl'meməri/</i>			
 paging 分页 <i>/peɪdʒɪŋ/</i>			
 device driver 设备驱动 <i>/dɪ'vaɪs'draɪvə/</i>			
 utility program 实用程序 <i>/ju:'tɪlɪtɪ'prəʊɡræm/</i>			
 disk defragmenter 碎片整理 <i>/disk'di:'fræɡməntə/</i>			
 backup 备份 <i>/'bækʌp/</i>			
 antivirus 杀毒软件 <i>/,æntɪ'vaɪrəs/</i>			
Economics			
<i>Topic 2 · The price system and the microeconomy</i>			
 costs of production 生产成本 <i>/kɒsts ɒv prə'dakʃn/</i>			
 subsidy 补贴 <i>/səbsɪdi/</i>			
 market supply 市场供给 <i>/'mɑ:kt sə'plaɪ/</i>			
 price elasticity of demand 需求价格弹性 <i>/praɪs ɪlə'stɪsɪtɪ ɒv dɪ'mænd/</i>			
 elastic 富有弹性 <i>/ɪ'læstɪk/</i>			
 inelastic 缺乏弹性 <i>/ɪn'læstɪk/</i>			

 unit elastic 单位弹性			
/ˈjuːnɪt ɪˈlæstɪk/			
 perfectly inelastic 完全无弹性			
/ˈpɜːfektli ɪnˈlæstɪk/			
 perfectly elastic 完全有弹性			
/ˈpɜːfektli ɪˈlæstɪk/			
 necessity 必需品			
/nəˈsesɪti/			
 luxury 奢侈品			
/ˈlʌkjəri/			
 total revenue 总收益			
/ˈtəʊtl ˈrevənjuː/			
 income elasticity of demand 需求收入弹性			
/ˈɪŋkəm ɪləˈstɪsɪti ɒv dɪˈmænd/			
 normal good 正常品			
/ˈnɔːml ɡʊd/			
 inferior good 低档品			
/ɪnˈfɪəriə ɡʊd/			

Morning Reading 晨读

Grade 11 · AS · Week 8

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

A steel ship weighs thousands of tonnes. Why does it float when a steel coin sinks? A body in water feels an upward force, the **upthrust**, equal to the weight of the water it has **displaced**. This is **Archimedes’ principle**. The ship’s hull is shaped to push aside an enormous volume of water, so the upthrust can match its huge weight. The coin displaces almost nothing, so it sinks. Even the air pushes on us: **atmospheric pressure** at sea level is about 100,000 pascals, though we never notice it.

Chemists this week met energy in reactions. An **exothermic** reaction releases heat, like the hand warmers 暖手宝 sold in winter; an **endothermic** one absorbs it, like the instant cold packs used for sports injuries. Every reaction must first climb over its **activation energy**.

In the market diagram, the crossing point of demand and supply gives the **equilibrium price**. Below it there is **excess demand**: a **shortage**, queues, and pressure for the price to rise.

Talk about it 说一说:

1. A ship floats but a coin sinks. Explain the difference in one sentence.
2. Ice-cream sellers cut prices every evening. What does this say about equilibrium?

Physics

Topics 5–6 · Work, energy and power, Deformation of solids

 chemical energy 化学能			
<i>/ˈkemɪkl ˈenədʒi/</i>			
 frictionless 无摩擦			
<i>/ˈfrɪkʃənləs/</i>			
 ramp 斜坡			
<i>/ræmp/</i>			
 efficiency 效率			
<i>/ˈɪfjənsi/</i>			
 voltage 电压			
<i>/ˈvɒltɪdʒ/</i>			
 spring 弹簧			
<i>/sprɪŋ/</i>			
 compression 压缩			
<i>/kəmˈpreʃn/</i>			
 spring constant 劲度系数			
<i>/sprɪŋ ˈkɒnstənt/</i>			
 tensile 拉伸			
<i>/ˈtensəl/</i>			
 extension 伸长量			
<i>/ekˈstɛnʃn/</i>			
 load 负载			
<i>/ləʊd/</i>			
 Hooke's law 胡克定律			
<i>/hʊks lɔː/</i>			
 limit of proportionality 比例极限			
<i>/ˈlɪmɪt ɒv prəˌpɔːʃəˈnælɪti/</i>			
 elastic 弹性			
<i>/ɪˈlæstɪk/</i>			
 plastic 塑性			
<i>/ˈplæstɪk/</i>			

series 串联

/ˈsɪəriːz/

parallel 并联

/ˈpærəlel/

strain 应变

/streɪn/

Young modulus 杨氏模量

/jʌŋ ˈmɒdjʊləs/

pulley 滑轮

/ˈpʊli/

Chemistry

Topics 4–5 · States of matter, Chemical energetics

covalent bonds 共价键

/ˈkəʊələnt bɒndz/

silicon(IV) oxide 二氧化硅

/ˈsɪlɪkən ˈɒksaɪd/

graphite 石墨

/ˈɡræfʌɪt/

diamond 金刚石

/ˈdaɪəmənd/

giant metallic 金属晶体

/ˈdʒaɪənt məˈtɛlɪk/

melting point 熔点

/ˈmeltɪŋ poɪnt/

electrical conductivity

导电性

/ɪˈlektrɪkl kɒndakˈtɪvɪti/

solubility 溶解度

/səˈljʊːˈbɪlɪti/

enthalpy change 焓变

/enˈθəlpi tʃeɪndʒ/

 exothermic 放热			
/egzəˈðɜ:mɪk/			
 endothermic 吸热			
/,endəʊˈθɜ:mɪk/			
 reaction pathway diagram 反应路径图			
/rɪˈækʃn ˈpæθweɪˈdaɪgræm/			
 activation energy 活化能			
/,æktɪˈveɪʃn ˈenədʒi/			
 standard conditions 标准条件			
/ˈstændəd kənˈdɪʃnz/			
 enthalpy change of reaction 反应焓变			
/enˈθælpi tʃeɪndʒ ov rɪˈækʃn/			
 enthalpy change of formation 生成焓变			
/enˈθælpi tʃeɪndʒ ov fɔːˈmeɪʃn/			
 enthalpy change of combustion 燃烧焓变			
/enˈθælpi tʃeɪndʒ ov kamˈbʌstʃn/			
 enthalpy change of neutralisation 中和焓变			
/enˈθælpi tʃeɪndʒ ov ˌnju:trəlaɪˈzeɪʃn/			

Biology

Topics 3–4 · Enzymes, Cell membranes and transport

 temperature 温度			
/ˈtemprɪtʃə/			
 colorimeter 比色计			
/ˌkʌləˈrɪmɪtə/			
 rate of reaction 反应速率			
/reɪt ov rɪˈækʃn/			
 kinetic energy 动能			
/kɪˈnetɪk ˈenədʒi/			

 collide 碰撞			
/kəˈlaɪd/			
 optimum temperature 最适温度			
/ˈoptɪməm ˈtempɪrɪtʃə/			
 denature 变性			
/ˈdenətʃə/			
 buffer solution 缓冲液			
/ˈbʌfə səˈlu:ʃn/			
 inhibitor 抑制剂			
/ɪnˈhɪbɪtə/			
 Michaelis–Menten constant 米氏常数			
/ˈmaɪkəlɪz ˈmentn ˈkɒnstənt/			
 affinity 亲和力			
/əˈfɪnɪti/			
 reversible 可逆			
/rɪˈvɜ:sɪbl/			
 competitive inhibitor 竞争性抑制剂			
/kamˈpetɪtɪv ɪnˈhɪbɪtə/			
 non-competitive inhibitor 非竞争性抑制剂			
/non kamˈpetɪtɪv ɪnˈhɪbɪtə/			
 immobilised enzyme 固定化酶			
/ɪˈmɒbəlaɪzd ˈenzaim/			
 alginate 海藻酸盐			
/ˈældʒɪneɪt/			
 fluid mosaic model 流动镶嵌模型			
/ˈfluɪd mɔːseɪnk ˈmɒdl/			
 bilayer 双层			
/ˈbɪleɪə/			
 carrier protein 载体蛋白			
/ˈkæriə ˈpraʊtɪn/			

 channel protein 通道蛋白			
/ˈtʃænl ˈprəʊtiːn/			
 cholesterol 胆固醇			
/kəˈlestərəl/			
 fluidity 流动性			
/fluːˈɪdɪti/			
 glycolipid 糖脂			
/ˈɡlaɪkəlɪpɪd/			

Mathematics

Topics 1–2 · Pure Mathematics 1, Pure Mathematics 2

 Integration 积分			
/ˌɪntɪˈɡreɪʃn/			
 constant of integration 积分常数			
/ˈkɒnstənt ɒv ˌɪntɪˈɡreɪʃn/			
 definite integral 定积分			
/ˈdefɪnət ˈɪntɪɡrəl/			
 region 区域			
/ˈrɪdʒn/			
 volume of revolution 旋转体体积			
/ˈvɒljʊm ɒv ˌrevəˈluːʃn/			
 composition of functions 复合函数			
/ˌkɒmpəˈzɪʃn ɒv ˈfʌŋkʃnz/			
 logarithms 对数			
/ˈlɒɡərɪθəmz/			
 exponential function 指数函数			
/ˌekspeɪˈnenʃl ˈfʌŋkʃn/			
 modulus 绝对值			
/ˈmɒdjʊləs/			
 polynomial 多项式			
/ˌpɒlɪˈnəʊmɪəl/			

Further Mathematics

Topics 1–3 · Further Pure Mathematics 1, Further Mechanics

 stretch 拉伸			
/stretʃ/			
 shear 切变			
/ʃiə/			
 Further Mechanics 进阶力学			
/ˈfɜːðə mɪˈkæniks/			
 projectile 抛射体			
/prəˈdʒektail/			
 constant acceleration 匀加速			
/ˈkɒnstənt əkˌsələˈreɪʃn/			

Computer Science

Topics 5–6 · System Software, Security, privacy and data integrity

 program library 程序库			
/ˈprəʊɡræm ˈlaɪbrəri/			
 subroutines 子程序			
/ˈsʌbrʊtiːnz/			
 static library 静态库			
/ˈstætɪk ˈlaɪbrəri/			
 dynamic library 动态库			
/daɪˈnæmɪk ˈlaɪbrəri/			
 translator 翻译器			
/ˈtrænsˈleɪtə/			
 compiler 编译器			
/ˈkəmˈpaɪlə/			
 executable 可执行文件			
/ɪɡˈzekjʊtəbl/			
 interpreter 解释器			
/ɪnˈtɜːprɪtə/			

 bytecode 字节码			
<i>/ˈbaɪtkoʊd/</i>			
 virtual machine 虚拟机			
<i>/ˈvɜːtʃʊəl məˈʃiːn/</i>			
 just-in-time compilation 即时编译			
<i>/dʒʌst ɪn taɪm ˌkɒmpɪˈleɪʃn/</i>			
<> integrated development environment 集成开发环境			
<i>/ˈɪntɪɡreɪtɪd dɪˈveləpmənt enˈvaɪrənmənt/</i>			
 syntax highlighting 语法高亮			
<i>/ˈsɪntæks ˈhaɪlaɪtɪŋ/</i>			
 auto-complete 自动补全			
<i>/ˈɔːtəʊ kəmˈpliːt/</i>			
 debugger 调试器			
<i>/ˈdiːbʌɡə/</i>			
 breakpoints 断点			
<i>/ˈbreɪkpoɪnts/</i>			
 version control 版本控制			
<i>/ˈvɜːʃn kənˈtrəʊl/</i>			
 refactoring 重构			
<i>/rɪˈfæktərɪŋ/</i>			
 unit test 单元测试			
<i>/ˈjuːnɪt test/</i>			
 security 安全			
<i>/sɪˈkjʊərɪti/</i>			
 unauthorised 未授权			
<i>/ʌnˈɔːθəraɪzd/</i>			
 privacy 隐私			
<i>/ˈprɪvəsi/</i>			
 integrity 完整性			
<i>/ɪnˈteɡrɪti/</i>			
 malware 恶意软件			
<i>/ˈmælweə/</i>			

 virus 病毒			
<i>/ˈvaɪrəs/</i>			
 worm 蠕虫			
<i>/wɜːm/</i>			
 networks 网络			
<i>/ˈnetwɜːks/</i>			
 Trojan horse 木马			
<i>/ˈtrɔːdʒn hɔːs/</i>			

Economics

Topic 2 · The price system and the microeconomy

 cross elasticity of demand 需求交叉弹性			
<i>/kros ɪləˈstɪsɪti ɒv dɪˈmænd/</i>			
 price elasticity of supply 供给价格弹性			
<i>/praɪs ɪləˈstɪsɪti ɒv səˈplaɪ/</i>			
 spare capacity 闲置产能			
<i>/speə kəˈpæsɪti/</i>			
 stocks 库存			
<i>/stɒks/</i>			
 momentary 瞬时			
<i>/ˈməʊməntəri/</i>			
 short run 短期			
<i>/ʃɔːt rʌn/</i>			
 long run 长期			
<i>/lɒŋ rʌn/</i>			
 equilibrium 均衡			
<i>/ˌɪkwɪˈlɪbrɪəm/</i>			
 equilibrium price 均衡价格			
<i>/ˌɪkwɪˈlɪbrɪəm praɪs/</i>			
 equilibrium quantity 均衡数量			
<i>/ˌɪkwɪˈlɪbrɪəm ˈkwɒntəti/</i>			

 disequilibrium 非均衡			
/ˌdiːsɪkwɪˈlɪbrɪəm/			
 excess demand 超额需求			
/ek'ses dɪ'mænd/			
 shortage 短缺			
/'ʃɔ:tɪdʒ/			
 excess supply 超额供给			
/ek'ses sə'plaɪ/			
 product market 产品市场			
/'prɒdakt 'mɑːkɪt/			

Morning Reading 晨读

Grade 11 · AS · Week 9

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Stretch a spring gently and it returns to its original length when you let go: the behaviour is **elastic**. **Hooke's law** says the **extension** is proportional to the **load**, and the **spring constant** measures the stiffness. Pull too far, past the **limit of proportionality**, and finally the spring deforms permanently: it has become **plastic**. Springs hide everywhere: in pens, mattresses, keyboards and car suspensions.

A factory beside a river makes cheap paint but releases waste into the water. The firm counts only its **private cost**; the fishermen downstream carry the **external cost**. Economists call the fishermen a **third party**, and the pollution a **negative externality**. Add private and external together and you get the true **social cost** of the paint, which the market price ignores. This is why governments tax pollution.

Programmers met translators this week. A **compiler** converts the whole program into machine code once, producing a fast **executable**; an **interpreter** translates line by line, which is slower but easier for testing.

Talk about it 说一说:

1. Name three objects you used today that contain a spring.
2. A neighbour plays loud music at midnight. Explain this as an externality.

Physics

Topics 6–7 · Deformation of solids, Waves

 micrometer 螺旋测微器			
/maɪ'krɒmɪtə/			
 elastic limit 弹性极限			
/ɪ'læstɪk 'lɪmɪt/			
 trapezia 梯形			
/trə'pi:ziə/			
 wave 波			
/weɪv/			
 medium 介质			
/ˈmi:diəm/			
 oscillate 振动			
/ˈɒsɪleɪt/			
 transverse wave 横波			
/træns'vɜ:s weɪv/			
 longitudinal wave 纵波			
/ˌlɒŋgɪ'tju:diɪl weɪv/			
 progressive wave 行波			
/prə'ɡresɪv weɪv/			
 amplitude 振幅			
/ˈæmplitju:d/			
 wavelength 波长			
/ˈweɪvlɛŋθ/			
 in phase 同相			
/ɪn feɪz/			
 crest 波峰			
/krest/			
 period 周期			
/ˈpiəriəd/			
 frequency 频率			
/ˈfrɪkwənsi/			
 hertz 赫兹			
/hɜ:ts/			

 phase difference 相位差			
/feɪz 'dɪfrəns/			
 radian 弧度			
/ˈreɪdiən/			
 propagate 传播			
/ˈprɒpəgeɪt/			
 cathode-ray oscilloscope 示波器			
/ˈkæθəd reɪ ɒ'sɪləskəʊp/			

Chemistry

Topics 5–7 · Chemical energetics, Electrochemistry, Equilibria

 specific heat capacity 比热容			
/spə'sɪfɪk hi:t kə'pæsɪti/			
 Hess's law 盖斯定律			
/ˈhesɪz lɔ:/			
 energy cycle 能量循环			
/ˈenədʒi 'saɪkl/			
 redox 氧化还原			
/rɪ'dɒks/			
 oxidation 氧化			
/ˈɒksɪ'deɪʃn/			
 reduction 还原			
/rɪ'dʌkʃn/			
 electron transfer 电子转移			
/ɪ'lektrɒn 'trænsfɜ:/			
 disproportionation 歧化			
/ˌdɪsprə'pɔ:ʃəneɪʃn/			
 oxidising agent 氧化剂			
/ˈɒksɪdaɪzɪŋ 'eɪdʒənt/			
 reducing agent 还原剂			
/rɪ'dju:zɪŋ 'eɪdʒənt/			

 reversible reaction 可逆反应			
/rɪ'vɜ:sɪbl rɪ'ækʃn/			
 forward reaction 正反应			
/fɔ:wəd rɪ'ækʃn/			
 reverse reaction 逆反应			
/rɪ'vɜ:s rɪ'ækʃn/			
 closed system 封闭系统			
/klaʊzd 'sɪstəm/			
 dynamic equilibrium 动态平衡			
/daɪ'næmɪk ˌɪkwɪ'libriəm/			
 Le Chatelier's principle 勒夏特列原理			
/lə 'tʃeɪliəz 'prɪnsɪpl/			
 equilibrium 平衡			
/ɪkwɪ'libriəm/			
 catalyst 催化剂			
/kætəlist/			

Biology

Topic 4 · Cell membranes and transport

 glycoprotein 糖蛋白			
/ˈɡlaɪkəprəʊtiːn/			
 antigen 抗原			
/ˈæntɪdʒen/			
 stability 稳定性			
/stə'bɪlɪti/			
 permeability 通透性			
/pɜ:mə'bɪlɪti/			
 partially permeable membrane 半透膜			
/pɑːʃəli 'pɜ:məbl 'membreɪn/			

 cell signalling 细胞信号传递			
/sel 'sɪgnəlɪŋ/			
 ligand 配体			
/ˈlɪɡənd/			
 hormone 激素			
/ˈhɔːməʊn/			
 target cell 靶细胞			
/ˈtɑːɡɪt sel/			
 receptor 受体			
/rɪ'septə/			
 passive 被动			
/ˈpæsɪv/			
 diffusion 扩散			
/dɪ'fjuːʒn/			
 simple diffusion 简单扩散			
/ˈsɪmpl dɪ'fjuːʒn/			
 concentration gradient 浓度梯度			
/kɒnsən'treɪʃn 'ɡreɪdɪənt/			
 carbon dioxide 二氧化碳			
/ˈkɑːbən daɪ'ɒksaɪd/			
 ion 离子			
/aɪən/			
 facilitated diffusion 易化扩散			
/fə'sɪlɪteɪtɪd dɪ'fjuːʒn/			
 active transport 主动运输			
/ˈæktɪv 'trænsˌpɔːt/			
 endocytosis 胞吞作用			
/endəʊsɪ'təʊsɪs/			
 exocytosis 胞吐作用			
/eg.zəʊsɪ'təʊsɪs/			
 volume 体积			
/ˈvɒljʊm/			

□ **surface area** 表面积
/ˈsɜːfɪs ˈeəriə/

○ **agar** 琼脂
/ˈeɪɡɑː/

Mathematics

Topic 2 · Pure Mathematics 2

×² **degree** 次数
/diːɡriː/

÷ **quotient** 商
/ˈkwɒʃənt/

% **remainder** 余数
/rɪˈmeɪndə/

% **remainder theorem** 余数定理
/rɪˈmeɪndə ˈθɪərəm/

× **factor theorem** 因式定理
/ˈfæktə ˈθɪərəm/

×² **indices** 指数
/ˈɪndɪsɪz/

📖 **laws of logarithms** 对数定律
/lɔːz ov ˈlɒɡərɪθəmz/

📄 **natural logarithm** 自然对数
/ˈnætʃərəl ˈlɒɡərɪθəm/

— **linear form** 线性形式
/ˈlɪnɪə fɔːm/

∧ **secant** 正割
/ˈsɪkənt/

Further Mathematics

Topic 3 · Further Mechanics

+ **Cartesian equation** 直角坐标方程
/kɑːˈtiːziən ɪˈkweɪʃn/

↪ **trajectory** 轨迹
/trəˈdʒektəri/

↻ **moment** 力矩
/ˈməʊmənt/

◎ **centre of mass** 质心
/ˈsentə ʌv mæs/

[:] **symmetry** 对称
/ˈsɪmətri/

Computer Science

Topics 5–6 · System Software, Security, privacy and data integrity

🕵️ **spyware** 间谍软件
/ˈspaɪweə/

🔒 **ransomware** 勒索软件
/ˈrænsəmweə/

📢 **adware** 广告软件
/ˈædweə/

🎣 **phishing** 网络钓鱼
/ˈfɪʃɪŋ/

👤 **hacking** 黑客入侵
/ˈhækɪŋ/

🚫 **denial of service** 拒绝服务
/dɪˈnaɪəl ʌv ˈsɜːvɪs/

👂 **eavesdropping** 窃听
/ˈiːvzdrɒpɪŋ/

👤 **man-in-the-middle** 中间人攻击
/mæn ɪnðə ˈmɪdl/

	social engineering 社会工程			
	/ˈsəʊl̩ˌendʒɪˈniəriŋ/			
	encryption 加密			
	/enˈkriptʃn/			
	audit logs 审计日志			
	/ˈɔːdɪt lɒɡz/			
	VPN 虚拟专用网			
	/ˌviː piː ˈen/			
	authentication 身份验证			
	/ɔːθentiˈkeɪʃn/			
	two-factor authentication 双因素认证			
	/tuː ˈfæktə ɔːθentiˈkeɪʃn/			
	authorisation 授权			
	/ɔːθaraɪˈzeɪʃn/			
	least-privilege 最小权限			
	/liːst ˈprɪvɪlɪdʒ/			
	plaintext 明文			
	/ˈpleɪntekst/			
	ciphertext 密文			
	/ˈsaɪfətekst/			
	Symmetric encryption 对称加密			
	/sɪˈmetrɪk enˈkriptʃn/			
	asymmetric encryption 非对称加密			
	/eɪsɪˈmetrɪk enˈkriptʃn/			
	public key 公钥			
	/ˈpʌblɪk kiː/			
	private key 私钥			
	/ˈpraɪvət kiː/			
	access control 访问控制			
	/ˈæksəs kənˈtraʊl/			

	validation 验证			
	/ˌvælɪˈdeɪʃn/			
	check digit 校验位			
	/tʃek ˈdɪdʒɪt/			
	verification 核对			
	/ˌverɪfɪˈkeɪʃn/			
	parity check 奇偶校验			
	/ˈpærɪti tʃek/			
	checksum 校验和			
	/ˈtʃeksəm/			
Economics				
<i>Topics 2-3 · The price system and the microeconomy, Government microeconomic intervention</i>				
	factor market 要素市场			
	/ˈfæktə ˈmɑːkɪt/			
	wage 工资			
	/weɪdʒ/			
	foreign exchange market 外汇市场			
	/ˈfɒrən eksˈtʃeɪndʒ ˈmɑːkɪt/			
	exchange rate 汇率			
	/eksˈtʃeɪndʒ reɪt/			
	consumer surplus 消费者剩余			
	/kənˈsuːmə ˈsɜːpləs/			
	producer surplus 生产者剩余			
	/prəˈdjuːsə ˈsɜːpləs/			
	welfare 福利			
	/ˈwelfeə/			
	market failure 市场失灵			
	/ˈmɑːkɪt ˈfeɪlə/			
	externality 外部性			
	/ekˈstɜːnælɪti/			

👤 **third party** 第三方
/θɜːd 'pɑːti/

👤 **negative externality** 负外部性
/'negatɪv ek'stɜːnælɪti/

🏢 **external cost** 外部成本
/ek'stɜːnl kɒst/

👤 **social cost** 社会成本
/'səʊl kɒst/

🏠 **private cost** 私人成本
/'praɪvət kɒst/

👤 **positive externality** 正外部性
/'pɒzɪtɪv ek'stɜːnælɪti/

Morning Reading 晨读

Grade 11 · AS · Week 10

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Pluck a guitar string and the sound you hear left the string as a **progressive wave** through the air. Its **frequency**, measured in **hertz**, sets the pitch; its **amplitude** sets the loudness. The air is pushed back and forth along the direction of travel, so sound is a **longitudinal wave**; light, vibrating across its direction of travel, is a **transverse wave**.

Malicious software comes in families, and the names matter. A **virus** attaches itself to a real program and spreads when the program runs; a **worm** travels through **networks** on its own. A **Trojan horse** pretends to be something useful. **Spyware** quietly watches what you type, and **ransomware** locks your files and demands payment. Most attacks still begin with **phishing**, a fake message that harvests passwords from busy people.

When one firm controls a market, it is a **monopoly**, and it may raise prices above the competitive level. Governments answer with **regulation** or, for essentials, a legal **maximum price**.

Talk about it 说一说:

1. Which is more dangerous: a virus or a phishing email? Argue your case.
2. Your city has one water company. Why might the government watch its prices?

Physics

Topic 7 · Waves

 time-base 时基			
<i>/taɪm beɪs/</i>			
 y-gain 垂直增益			
<i>/waɪ geɪn/</i>			
 intensity 强度			
<i>/ɪn'tensɪti/</i>			
 point source 点源			
<i>/pɔɪnt sɔːs/</i>			
 wavefront 波前			
<i>/ˈweɪvfrʌnt/</i>			
 rarefaction 稀疏			
<i>/ˌreəriˈfækʃn/</i>			
 sine curve 正弦曲线			
<i>/saɪn kɜːv/</i>			
 source 波源			
<i>/sɔːs/</i>			
 observer 观察者			
<i>/əbˈzɜːvə/</i>			
 Doppler effect 多普勒效应			
<i>/ˈdɒplə ɪˈfekt/</i>			
 electromagnetic wave 电磁波			
<i>/ɪˌlektromægˈnetɪk weɪv/</i>			
 electromagnetic spectrum 电磁波谱			
<i>/ɪˌlektromægˈnetɪk ˈspektrəm/</i>			
 microwaves 微波			
<i>/ˈmaɪkrəweɪvz/</i>			
 infrared 红外线			
<i>/ˌɪnfɪrəˈred/</i>			

 ultraviolet 紫外线			
<i>/ˌʊltrəˈvaɪələɪt/</i>			
 X-rays X 射线			
<i>/eks reɪz/</i>			
 gamma-rays γ 射线			
<i>ˈgæmə reɪz/</i>			
 polarisation 偏振			
<i>/ˌpɒləraɪˈzeɪʃn/</i>			
 plane-polarised 平面偏振			
<i>/pleɪn ˈpɒləraɪzɪd/</i>			
 polarising filter 偏振片			
<i>ˈpɒləraɪzɪŋ ˈfɪltə/</i>			

Chemistry

Topic 7 · Equilibria

 equilibrium constant 平衡常数			
<i>/ɪˈkwɪlɪbrɪəm ˈkɒnstənt/</i>			
 partial pressure 分压			
<i>ˈpɑːʃl ˈpreʃə/</i>			
 mole fraction 摩尔分数			
<i>/məʊl ˈfrækʃn/</i>			
 Haber process 哈伯法			
<i>ˈheɪbə ˈprəʊses/</i>			
 Contact process 接触法			
<i>ˈkɒntækt ˈprəʊses/</i>			
 acid 酸			
<i>ˈæsɪd/</i>			
 proton donor 质子供体			
<i>ˈpraʊtɒn ˈdəʊnə/</i>			
 base 碱			
<i>/beɪs/</i>			
 proton acceptor 质子受体			
<i>ˈpraʊtɒn əkˈseptə/</i>			

 strong acid 强酸			
/strɒŋ 'æsɪd/			
 strong base 强碱			
/strɒŋ beɪs/			
 dissociated 解离			
/dɪ'səʊsiətɪd/			
 weak acid 弱酸			
/wɪk 'æsɪd/			
 weak base 弱碱			
/wɪk beɪs/			
 universal indicator 通用指示剂			
/juːnɪ'vɜːsl 'ɪndɪkeɪtə/			
 Neutralisation 中和			
/ˌnjuːtrəlaɪ'zeɪʃn/			
 salt 盐			
/sɒlt/			
 titration curve 滴定曲线			
/taɪ'treɪʃn kɜːv/			

Biology

Topics 4-5 · Cell membranes and transport, The mitotic cell cycle

 dialysis tubing 透析袋			
/daɪ'æləsɪs 'tjuːbɪŋ/			
 solute 溶质			
/ˈsɒljʊt/			
 distilled water 蒸馏水			
/dɪ'stɪld 'wɔːtə/			
 turgid 膨胀			
/ˈtɜːdʒɪd/			
 plasmolysis 质壁分离			
/plæz'mələsɪs/			
 haemolysis 溶血			
/hi:'mələsɪs/			

 chromosome 染色体			
/'kraʊməsəʊm/			
 histone 组蛋白			
/'hɪstəʊn/			
 replication 复制			
/ˌreplɪ'keɪʃn/			
 sister chromatids 姐妹染色单体			
/'sɪstə 'kraʊmətɪdz/			
 centromere 着丝粒			
/'sentraʊmə/			
 telomere 端粒			
/'teləʊmə/			
 mitosis 有丝分裂			
/'maɪ'təʊsɪs/			
 daughter cell 子细胞			
/'dɔːtə sel/			
 gene 基因			
/dʒiːn/			
 multicellular 多细胞			
/'mʌltɪ'seljələ/			
 organism 生物体			
/'ɔːɡənɪzəm/			
 tissue 组织			
/'tɪʃuː/			
 asexual reproduction 无性生殖			
/eɪ'sekʃʊəl rɪprə'dʌkʃn/			
 cell cycle 细胞周期			
/sel 'saɪkl/			
 interphase 间期			
/'ɪntə'feɪz/			
 cytokinesis 胞质分裂			
/'saɪtəkə'niːsɪs/			

🧬 **stem cell** 干细胞
/stem sel/

Mathematics

Topic 2 · Pure Mathematics 2

📐 **cosecant** 余割
/ˈkəʊsekənt/

📐 **cotangent** 余切
/ˈkəʊtændʒənt/

= **trigonometric identities**
三角恒等式
/ˈtrɪɡənəʊˈmetrɪk aɪˈdentɪtɪz/

+ **compound angle** 复合角
/ˈkɒmpaʊnd ˈæŋɡl/

📐 **double angle** 二倍角
/ˈdʌbl ˈæŋɡl/

📐 **R-formula** 辅助角公式
/ɑːˈfɔːmjələ/

✖ **product rule** 乘积法则
/ˈprɒdʌkt ruːl/

÷ **quotient rule** 商法则
/ˈkwəʊʃənt ruːl/

(x) **parametric equations** 参数方程
/ˌpærəˈmetrɪk ɪˈkweɪʒnz/

🔗 **implicitly** 隐式
/ɪmˈplɪsɪtli/

Further Mathematics

Topic 3 · Further Mechanics

⚖ **equilibrium** 平衡
/ɪˈkwɪˈlɪbrɪəm/

⚡ **toppling** 翻倒
/ˈtɒplɪŋ/

→ **sliding** 滑动
/ˈslaɪdɪŋ/

🔄 **angular speed** 角速度
/ˈæŋɡjələ spiːd/

🌀 **centripetal acceleration**
向心加速度
/senˈtrɪpɪtəl əkˌseləˈreɪʃn/

Computer Science

Topics 5-7 · System Software, Security, privacy and data integrity, Ethics and Ownership

🔄 **cyclic redundancy check**
循环冗余校验
/ˈsaɪklɪk rɪˈdʌndənsi tʃek/

🔗 **pharming** 域名欺骗
/ˈfɑːmɪŋ/

👤 **hackers** 黑客
/ˈhækəz/

👤 **user accounts** 用户账户
/ˈjuːzə əˈkaʊnts/

📝 **digital signatures** 数字签名
/ˈdɪdʒɪtl ˈsɪɡnɪtʃəz/

🔗 **anti-spyware** 反间谍软件
/ˈæntiˈspaɪweə/

🔑 **access rights** 访问权限
/ˈækses raɪts/

👤 **biometrics** 生物识别
/ˌbaɪəʊˈmetrɪks/

⚖ **ethics** 伦理
/eθɪks/

🔒 **confidentiality** 保密性
/ˌkɒnfɪˌdʌnʃiˈæləti/

⚡ **conflicts of interest** 利益冲突
/ˈkɒnflɪkt ɒv ˈɪntrest/

© intellectual property 知识产权			
/ˌɪntəˈlektʃuəl ˈprɒpəti/			
© copyright 版权			
/ˈkɒprɪt/			
📄 patent 专利			
/ˈpeɪtənt/			
🔒 software licence 软件许可证			
/ˈsɒftweə ˈlaɪsəns/			
🔒 proprietary 专有			
/prəˈpraɪətəri/			
🔒 open-source 开源			
/ˈəʊpən sɔːs/			
© copyleft 著佐权			
/ˈkɒpileft/			
📁 freeware 免费软件			
/ˈfriːweə/			
🔗 shareware 共享软件			
/ˈʃeəweə/			
🧠 artificial intelligence 人工智能			
/ˌɑːtɪˈfɪʃl mˈtelɪdʒəns/			
🧠 machine learning 机器学习			
/məˈʃiːn ˈlɜːnɪŋ/			
🧠 Deep learning 深度学习			
/diːp ˈlɜːnɪŋ/			
🧠 neural networks 神经网络			
/ˈnjuːrəl ˈnetwɜːks/			
🗣️ speech recognition 语音识别			
/spiːtʃ ˌrekəɡˈnɪʃn/			
🖼️ image recognition 图像识别			
/ˈɪmɪdʒ ˌrekəɡˈnɪʃn/			

🗣️ machine translation 机器翻译			
/məˈʃiːn trænˈsleɪʃn/			
👉 recommendation systems 推荐系统			
/ˌrekəmenˈdeɪʃn ˈsɪstəmz/			
Economics			
<i>Topic 3 · Government microeconomic intervention</i>			
👉 external benefit 外部收益			
/ekˈstɜːnl ˈbenɪfɪt/			
👑 monopoly 垄断			
/məˈnɒpəli/			
👑 monopoly power 垄断势力			
/məˈnɒpəli ˈpaʊə/			
⚖️ inequality 不平等			
/ʌniːˈkwɒləti/			
📊 asymmetric information 信息不对称			
/ˌeɪsɪˈmetrɪk ˌɪnfəˈmeɪʃn/			
💰 indirect tax 间接税			
/ɪndɪˈrekt tæks/			
👉 incidence of a tax 税收归宿			
/ˈɪnsɪdəns əvə tæks/			
⬇️ maximum price 最高限价			
/ˈmæksɪməm praɪs/			
⬆️ minimum price 最低限价			
/ˈmɪnɪməm praɪs/			
📦 buffer stock 缓冲库存			
/ˈbʌfə stɒk/			
📋 regulation 管制			
/ˌregjʊˈleɪʃn/			
🏛️ state provision 政府提供			
/steɪt prəˈvɪʒn/			

 tradable permits 可交易许可证			
/ˈtreɪdəbl̩ ˈpɜːmits/			
 government failure 政府失灵			
/ˈgʌvənmənt ˈfeɪlə/			
 black market 黑市			
/blæk ˈmɑːkt/			

Morning Reading 晨读

Grade 11 · AS · Week 11

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

How big is an economy? Add up the value of everything produced inside the country in a year and you get the **gross domestic product**. But be careful with rising prices: **nominal** GDP can grow while the country actually makes no more than before. **Real** GDP removes the effect of inflation, and dividing by the population gives GDP **per capita**, a rough measure of the average person’s income. Rough, because it says nothing about how income is shared, or about unpaid work at home.

An ambulance races past and its siren drops in pitch as it passes. This is the **Doppler effect**: waves from an approaching **source** reach the **observer** squeezed together, at higher frequency; as the source leaves, the waves stretch out. Astronomers use exactly this to show distant galaxies rushing away from us.

To keep data honest on its journey, computers add checks: a **parity check** counts ones, a **checksum** sums the bytes, and **encryption** with a **public key** and a **private key** keeps the content secret.

Talk about it 说一说:

1. Nominal GDP rose 5%, inflation was 5%. Did the economy really grow?
2. Where else have you heard the Doppler effect? Describe the sound.

Physics

Topics 7–8 · Waves, Superposition

— transmission axis 透光轴			
/ˈtrænˈsmɪʃn ˈæksɪs/			
% Malus’s law 马吕斯定律			
/ˈmæləsɪz lɔː/			
↗ vector sum 矢量和			
/ˈvektə sʌm/			
≡ superposition 叠加			
/ˌsuːpəˈzɪʃn/			
+ constructive interference 相长干涉			
/kənˈstrʌktɪv ˌɪntəˈfɪərəns/			
✓ trough 波谷			
/trɒf/			
— destructive interference 相消干涉			
/dɪˈstrʌktɪv ˌɪntəˈfɪərəns/			
Λ stationary wave 驻波			
/ˈsteɪʃənəri weɪv/			
[ɪ] reflected 反射			
/rɪˈflektɪd/			
• node 波节			
/nəʊd/			
○ antinode 波腹			
/ˌæntɪˈnəʊd/			
↔ antiphase 反相			
/ˌæntɪˈfeɪz/			
🔊 resonance tube 共鸣管			
/ˈrezənəns tjʊb/			
— fundamental 基频			
/ˌfʌndəˈmentl/			
田 diffraction 衍射			
/dɪˈfrækʃn/			

□ obstacle 障碍物			
/ˈɒbstəkl/			
🌊 ripple tank 水波槽			
/ˈrɪpl tæŋk/			
≡ interference 干涉			
/ˌɪntəˈfɪərəns/			
= coherent 相干			
/kəʊˈhɪərənt/			
— slit 狭缝			
/slɪt/			

Chemistry

Topics 7–10 · Equilibria, Reaction kinetics, The Periodic Table: chemical periodicity, Group 2

📊 indicator 指示剂			
/ˈɪndɪkeɪtə/			
🕒 rate of reaction 反应速率			
/reɪt ɒv rɪˈækʃn/			
💥 collision frequency 碰撞频率			
/kəˈlɪʒn ˈfriːkwənsi/			
✓ effective collision 有效碰撞			
/ɪˈfektɪv kəˈlɪʒn/			
✗ non-effective collision 无效碰撞			
/nɒn ɪˈfektɪv kəˈlɪʒn/			
📊 Boltzmann distribution 玻尔兹曼分布			
/ˈbɒltzmən ˌdɪstriˈbjʊʃn/			
⚡ catalysis 催化作用			
/kætəˈlæsɪs/			
⚙ reaction mechanism 反应机理			
/rɪˈækʃn ˈmekənɪzəm/			

 homogeneous catalyst 均相催化剂			
/hə'məʊdʒɪnəs 'kætəlɪst/			
 heterogeneous catalyst 多相催化剂			
/hetrə'dʒɪniəs 'kætəlɪst/			
 periodicity 周期性			
/ˌpɪərɪə'dɪsɪti/			
 valence shell 价层			
/'veɪləns ʃel/			
 oxide 氧化物			
/'ɒksaɪd/			
 amphoteric 两性			
/ˌæmfəʊ'terɪk/			
 hydroxide 氢氧化物			
/haɪ'drɒksaɪd/			
 hydrolysis 水解			
/haɪ'drɒləsɪs/			
 reactivity 反应活性			
/rɪˈæktɪvɪti/			
 sulfate 硫酸盐			
/'sʌlfet/			

Biology

Topics 5–6 · The mitotic cell cycle, Nucleic acids and protein synthesis

 differentiate 分化			
/ˌdɪfə'renʃiət/			
 tumour 肿瘤			
/'tju:mə/			
 prophase 前期			
/'prəfeɪz/			
 spindle 纺锤体			
/'spɪndl/			

 metaphase 中期			
/'meta'feɪz/			
 equator 赤道			
/'kwetə/			
 anaphase 后期			
/'ænəfeɪz/			
 telophase 末期			
/'telafeɪz/			
 nucleotide 核苷酸			
/'nju:klɒtaɪd/			
 base 碱基			
/beɪs/			
 adenine 腺嘌呤			
/'ædəni:n/			
 ribose 核糖			
/'rɪbəʊs/			
 purine 嘌呤			
/'pjʊəri:n/			
 guanine 鸟嘌呤			
/'gwa:nəɪn/			
 pyrimidine 嘧啶			
/'pɪrɪmɪdɪn/			
 cytosine 胞嘧啶			
/'saɪtəsəɪn/			
 thymine 胸腺嘧啶			
/'θaɪməɪn/			
 uracil 尿嘧啶			
/'jʊərəsɪl/			
 double helix 双螺旋			
/'dʌbl 'hi:lɪks/			
 strand 链			
/'strænd/			
 deoxyribose 脱氧核糖			
/'di:'ɒksɪrɪbəʊs/			

 phosphodiester bond 磷酸二酯键			
<i>/ˈfɒsfədiɪstə baʊnd/</i>			
 complementary base pairing 碱基互补配对			
<i>/ˌkɒmplɪˈmentəri beɪs ˈpeərɪŋ/</i>			

Mathematics

Topics 2–4 · Pure Mathematics 2, Mechanics

 trapezium rule 梯形法则			
<i>/trəˈpiːziəm ruːl/</i>			
 root 根			
<i>/ruːt/</i>			
 sign change 变号			
<i>/saɪn ˈtʃeɪndʒ/</i>			
 iteration 迭代			
<i>/ɪˈteɪʃən/</i>			
 iterative formula 迭代公式			
<i>/ɪˈtərətɪv ˈfɔːmjələ/</i>			
 converge 收敛			
<i>/kənˈvɜːdʒ/</i>			
 integration by substitution 换元积分			
<i>/ɪnˈtɪɡrəʃən baɪ ˌsʌbstɪˈtjuːʃn/</i>			
 Mechanics 力学			
<i>/mɪˈkæniks/</i>			
 force 力			
<i>/fɔːs/</i>			
 components 分量			
<i>/kəmˈpəʊnənts/</i>			

Further Mathematics

Topic 3 · Further Mechanics

 horizontal circle 水平圆			
<i>/ˌhɒrɪˈzɒntl ˈsɜːkl/</i>			
 vertical circle 竖直圆			
<i>/ˈvɜːtɪkl ˈsɜːkl/</i>			
 Hooke's law 胡克定律			
<i>/hʊks lɔː/</i>			
 modulus of elasticity 弹性模量			
<i>/ˈmɒdʒələs ɒv ɪləˈstɪsɪti/</i>			
 elastic potential energy 弹性势能			
<i>/ɪˈlæstɪk pəˈtenʃl ˈenədʒi/</i>			

Computer Science

Topics 7–8 · Ethics and Ownership, Databases

 autonomous vehicles 自动驾驶汽车			
<i>/ɔːˈtɒnəməs ˈviːklz/</i>			
 optical character recognition 光学字符识别			
<i>/ˈɒptɪkl ˈkærɪktə ˌrekəɡˈnɪʃn/</i>			
 text-to-speech 文本转语音			
<i>/tekst tə ˈspiːtʃ/</i>			
 bias 偏见			
<i>/ˈbiːəs/</i>			
 flat files 平面文件			
<i>/flæt faɪlz/</i>			
 data redundancy 数据冗余			
<i>/ˈdeɪtə rɪˈdʌndənsi/</i>			

 data inconsistency 数据不一致			
/ˈdeɪtə ˌɪnkanˈsɪstənsi/			
 relational database 关系数据库			
/rɪˈleɪʃnəl ˈdeɪtəbeɪs/			
 table 表			
/'teɪbl/			
 entity 实体			
/'entɪti/			
 record 记录			
/'rekərd/			
 field 字段			
/'fi:ld/			
 primary key 主键			
/'praɪməri ki:/			
 foreign key 外键			
/'fɒrən ki:/			
 composite key 复合键			
/'kɒmpəzɪt ki:/			
 candidate key 候选键			
/'kændɪdeɪt ki:/			
 referential integrity 参照完整性			
/,refə'renʃl ɪn'tegriti/			
 entity-relationship diagram 实体关系图			
/'entɪti rɪˈleɪʃnʃɪp ˈdaɪəgræm/			
 cardinality 基数			
/'kɑ:di'nælɪti/			
 one-to-many 一对多			
/'wʌn tə 'meni/			
 link table 连接表			
/'lɪŋk 'teɪbl/			
 normalisation 规范化			
/'nɔ:məlaɪ'zeɪʃn/			

 normal forms 范式			
/'nɔ:ml fɔ:mz/			
 atomic 原子			
/'a:təmɪk/			
 transitive dependency 传递依赖			
/'trænsɪtv dɪ'pendənsi/			
 DBMS 数据库管理系统			
/'di: bi: em 'es/			
 data dictionary 数据字典			
/'deɪtə 'dɪkʃənəri/			
 concurrent access 并发访问			
/'kən'kʌrənt 'ækses/			

Economics

Topics 3-4 · Government microeconomic intervention, The macroeconomy

 flow 流量			
/'fləʊ/			
 wealth 财富			
/'welθ/			
 stock 存量			
/'stɒk/			
 progressive tax 累进税			
/'prə'gresɪv tæks/			
 percentage 百分比			
/'pə'sentɪdʒ/			
 benefits 福利金			
/'benɪfɪts/			
 transfer payments 转移支付			
/'trænsfɜ: 'peɪmənts/			
 redistribution 再分配			
/'rɪ:dɪstrɪ'bju:ʃn/			

 national income 国民收入			
/ˈnæʃənl ˈɪŋkəm/			
 gross domestic product 国内生产总值			
/ɡrəʊs dəˈmestɪk ˈprɒdʌkt/			
 gross national income 国民总收入			
/ɡrəʊs ˈnæʃənl ˈɪŋkəm/			
 nominal 名义			
/ˈnɒmɪnl/			
 real 实际			
/rɪəl/			
 per capita 人均			
/pɜː ˈkeɪpɪtə/			
 standard of living 生活水平			
/ˈstændəd ɒv ˈlɪvɪŋ/			

Morning Reading 晨读

Grade 11 · AS · Week 12

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

A student asks an image generator for a painting "in the style of a famous artist", and in seconds it appears. **Artificial intelligence** systems learn patterns from millions of examples; this is **machine learning**, and the deepest versions use **neural networks** loosely inspired by the brain. But who owns the picture? The artists whose work trained the model were never asked. **Copyright** law protects creative work, and **intellectual property** in general, yet it was written long before **deep learning** existed. Some programmers choose **open-source** licences that invite sharing; others sell **proprietary** software and guard the code.

In physics, two waves meeting on a string add together: this is **superposition**. Send waves down a rope tied at one end and the reflections combine into a **stationary wave**, with still points called **nodes** and wildly moving points called **antinodes**, the physics behind every guitar note.

Economists picture money moving in a **circular flow of income** between households and firms. **Injections** such as **investment** enlarge the flow; **leakages** such as **saving** shrink it.

Talk about it 说一说:

1. Should an AI image trained on an artist's work need the artist's permission?
2. Press a guitar string at its middle. Predict what happens to the note.

Physics

Topics 8–9 · Superposition, Electricity

 double-slit 双缝			
/ˈdʌbl slɪt/			
 path difference 路程差			
/pæθ ˈdɪfrəns/			

 fringe spacing 条纹间距			
/frɪndʒ 'speɪsɪŋ/			
 fringe 条纹			
/frɪndʒ/			
 maximum 极大			
/ˈmæksɪmə/			
 minimum 极小			
/ˈmɪnɪmə/			
 diffraction grating 衍射光栅			
/dɪˈfrækʃn 'ɡreɪtɪŋ/			
 normal 法线			
/ˈnɔːml/			
 slit spacing 缝间距			
/slɪt 'speɪsɪŋ/			
 order 级次			
/ˈɔːdə/			
 electric current 电流			
/ɪˈlektɹɪk 'kærənt/			
 charge carrier 载流子			
/tʃɑːdʒ 'kæriə/			
 electron 电子			
/ɪˈlektɹən/			
 electrolyte 电解质			
/ɪˈlektɹəlaɪt/			
 ion 离子			
/aɪən/			
 semiconductor 半导体			
/ˌsemɪkənˈdaktə/			
 hole 空穴			
/həʊl/			
 conventional current 常规电流			
/kənˈvenʃənəl 'kærənt/			

 quantised 量子化			
/ˈkwɒntaɪzd/			
 elementary charge 基本电荷			
/elɪˈmentəri tʃɑːdʒ/			
Chemistry			
<i>Topics 10–12 · Group 2, Group 17, Nitrogen and sulfur</i>			
 carbonate 碳酸盐			
/ˈkɑːbəneɪt/			
 thermal decomposition 热分解			
/ˈθɜːml ˌdɪːkɒmpəˈzɪʃn/			
 nitrate 硝酸盐			
/ˈnaɪtreɪt/			
 thermal stability 热稳定性			
/ˈθɜːml stəˈbɪlɪti/			
 halogen 卤素			
/ˈhælədʒn/			
 volatility 挥发性			
/ˌvɒləˈtɪlɪti/			
 hydrogen halide 卤化氢			
/ˈhaɪdrədʒn ˈhælaɪd/			
 halide ion 卤离子			
/ˈhælaɪd ˈaɪən/			
 ammonia 氨			
/æˈmɒniə/			
 precipitate 沉淀			
/prɪˈsɪpɪteɪt/			
 water purification 水净化			
/ˈwɔːtə ˌpjʊəntɪˈkeɪʃn/			
 bacteria 细菌			
/ˈbæktɪəriə/			

= triple bond 三键			
<i>/ˈtripl bɒnd/</i>			
🧴 basicity 碱性			
<i>/beɪˈsɪtɪ/</i>			
⊕ ammonium ion 铵离子			
<i>/æˈmɒniəm ˈaɪən/</i>			
→ displacement 置换			
<i>/dɪˈspleɪsmənt/</i>			
⚙ internal combustion engine 内燃机			
<i>/ɪnˈtɜːnl kəmˈbʌstʃn ˈendʒɪn/</i>			
🏭 catalytic converter 催化转化器			
<i>/kætəˈlɪtɪk kənˈvɜːtə/</i>			

Biology

Topics 6–7 · Nucleic acids and protein synthesis, Transport in plants

🔄 base pair 碱基对			
<i>/beɪs peə/</i>			
↕ antiparallel 反平行			
<i>/ˌæntɪˈpærələl/</i>			
📄 semi-conservative replication 半保留复制			
<i>/ˈsemi kənˈsɜːvətɪv ˌreplɪˈkeɪʃn/</i>			
🧬 polymerase 聚合酶			
<i>/ˌpɒlɪməˈreɪz/</i>			
→ leading strand 前导链			
<i>/ˈliːdɪŋ strænd/</i>			
← lagging strand 后随链			
<i>/ˈlæɡɪŋ strænd/</i>			
🔗 ligase 连接酶			
<i>/ˈliːgeɪs/</i>			
{ } triplet 三联体			
<i>/ˈtriplɪt/</i>			

{ } codon 密码子			
<i>/ˈkəʊdɒn/</i>			
📄 transcription 转录			
<i>/trænˈskɪpʃn/</i>			
📄 template strand 模板链			
<i>/ˈtempleɪt strænd/</i>			
📄 non-transcribed strand 非转录链			
<i>/nɒn trænˈskraɪbd strænd/</i>			
📄 primary transcript 初级转录本			
<i>/ˈpraɪməri ˈtrænskɪpt/</i>			
✓ exon 外显子			
<i>/egˈzɒn/</i>			
✂ intron 内含子			
<i>/ɪnˈtrɒn/</i>			
↔ translation 翻译			
<i>/trænˈsleɪʃn/</i>			
{ } anticodon 反密码子			
<i>/ˌæntɪˈkəʊdɒn/</i>			
↔ mutation 突变			
<i>/mjuːˈteɪʃn/</i>			
🔄 substitution 替换			
<i>/səbstrɪˈtjuːʃn/</i>			
📄 deletion 缺失			
<i>/dɪˈliːʃn/</i>			
✚ insertion 插入			
<i>/ɪnˈsɜːʃn/</i>			
↑ xylem 木质部			
<i>/ˈzaɪləm/</i>			
💎 mineral ion 矿物离子			
<i>/ˈmɪnərəl ˈaɪən/</i>			

Mathematics

Topic 4 · Mechanics

 resultant 合力			
<i>/rɪˈzʌltənt/</i>			
 equilibrium 平衡			
<i>/ɪkwɪˈlɪbrɪəm/</i>			
 contact force 接触力			
<i>/ˈkɒntækt fɔːs/</i>			
 normal reaction 法向反作用力			
<i>/ˈnɔːml rɪˈækʃn/</i>			
 friction 摩擦力			
<i>/ˈfrɪkʃn/</i>			
 limiting friction 最大静摩擦力			
<i>/ˈlɪmɪtɪŋ ˈfrɪkʃn/</i>			
 coefficient of friction 摩擦系数			
<i>/ˈkəʊɪˈfɪʃənt ɒv ˈfrɪkʃn/</i>			
 Newton's third law 牛顿第三定律			
<i>/ˈnjuːtntz θɜːd lɔː/</i>			
 distance 距离			
<i>/ˈdɪstəns/</i>			
 speed 速率			
<i>/spiːd/</i>			

Further Mathematics

Topic 3 · Further Mechanics

 differential equation 微分方程			
<i>/ˌdɪfəˈrenʃl ɪˈkweɪʃn/</i>			
 variable force 变力			
<i>/ˈveəriəbl fɔːs/</i>			

 conservation of momentum 动量守恒			
<i>/ˈkɒnsəˈveɪʃn ɒv məʊˈmentəm/</i>			
 Newton's experimental law 牛顿实验定律			
<i>/ˈnjuːtntz ɛkˌspɛrɪˈmentl lɔː/</i>			
 coefficient of restitution 恢复系数			
<i>/ˈkəʊɪˈfɪʃənt ɒv rɪstɪˈtjuːʃn/</i>			

Computer Science

Topics 8–9 · Databases, Algorithm Design and Problem-solving

 transactions 事务			
<i>/trænˈsækʃnz/</i>			
 views 视图			
<i>/vjuːz/</i>			
 SQL 结构化查询语言			
<i>/ˌes ˈkjuː ˈel/</i>			
 Data Definition Language 数据定义语言			
<i>/ˈdeɪtə ˌdefɪˈnɪʃn ˈlæŋɡwɪdʒ/</i>			
 Data Manipulation Language 数据操纵语言			
<i>/ˈdeɪtə mænɪpjʊˈleɪʃn ˈlæŋɡwɪdʒ/</i>			
 query 查询			
<i>/ˈkwɪəri/</i>			
 join 连接			
<i>/dʒɔɪn/</i>			
 aggregate functions 聚合函数			
<i>/ˈægrɪgeɪt ˈfʌŋkʃnz/</i>			
 tuple 元组			
<i>/ˈtuːpl/</i>			
 attribute 属性			
<i>/ˈætrɪbjʊt/</i>			

 secondary key 次键			
<i>/ˈsekəndəri kiː/</i>			
 indexing 索引			
<i>/ˈɪndeksɪŋ/</i>			
 data management 数据管理			
<i>/ˈdeɪtə ˈmænɪdʒmənt/</i>			
 data modelling 数据建模			
<i>/ˈdeɪtə ˈmɒdəlɪŋ/</i>			
 logical schema 逻辑模式			
<i>/ˈlɒdʒɪkl ˈskiːmə/</i>			
 data integrity 数据完整性			
<i>/ˈdeɪtə ɪnˈtegrɪti/</i>			
 data security 数据安全			
<i>/ˈdeɪtə sɪˈkjʊərɪti/</i>			
 query processor 查询处理器			
<i>/ˈkwɪəri ˈprəʊsesə/</i>			
 developer interface 开发者接口			
<i>/diˈveləpə ˈɪntəfeɪs/</i>			
 computational thinking 计算思维			
<i>/kəmˈpjʊːˈteɪʃənl ˈθɪŋkɪŋ/</i>			
 abstraction 抽象			
<i>/əbˈstrækʃn/</i>			
 decomposition 分解			
<i>/ˌdɪkɒmpəˈzɪʃn/</i>			
 algorithm 算法			
<i>/ˈælgərɪθəm/</i>			
 unambiguous 无歧义			
<i>/ʌnæmˈbɪɡjuːəs/</i>			
 deterministic 确定性			
<i>/dɪˈtɜːmɪˈnɪstɪk/</i>			

 identifier table 标识符表			
<i>/aɪˈdentɪfaɪə ˈteɪbl/</i>			
 variable 变量			
<i>/ˈveəriəbl/</i>			
 data type 数据类型			
<i>/ˈdeɪtə taɪp/</i>			
Economics			
<i>Topic 4 · The macroeconomy</i>			
 distribution 分配			
<i>/ˌdɪstrɪˈbjʊːʃn/</i>			
 informal economy 非正规经济			
<i>/ɪnˈfɔːml ɪˈkɒnəmi/</i>			
 circular flow of income 收入循环流			
<i>/ˈsɜːkjələ ˈfləʊ ɒv ˈɪŋkəm/</i>			
 household 家庭			
<i>/ˈhaʊshəʊld/</i>			
 leakages 漏出			
<i>/ˈliːkɪdʒɪz/</i>			
 saving 储蓄			
<i>/ˈseɪvɪŋ/</i>			
 taxation 税收			
<i>/ˈtæksəˈseɪʃn/</i>			
 imports 进口			
<i>/ɪmˈpɔːts/</i>			
 injections 注入			
<i>/ɪnˈdʒekʃnz/</i>			
 investment 投资			
<i>/ɪnˈvestmənt/</i>			
 government spending 政府支出			
<i>/ˈgʌvənmənt ˈspendɪŋ/</i>			

 exports 出口			
/ˈeksports/			
 closed economy 封闭经济			
/ˈklaʊzd iˈkɒnəmi/			
 open economy 开放经济			
/ˈəʊpən iˈkɒnəmi/			
 aggregate demand 总需求			
/ˈægrɪgeɪt dɪˈmænd/			

Morning Reading 晨读

Grade 11 · AS · Week 13

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Your school runs on a **relational database**, even if you never see it. One **table** stores students, another stores classes. Each row is a **record**; each column, such as name or birthday, is a **field**. Every student has a unique **primary key**, and the class table points to it with a **foreign key**. That link is what makes the database relational: information is stored once and connected, never copied. When the office prints your timetable, a query joins the tables in milliseconds.

Physics this week showed light behaving strangely. Shine one small light through two narrow slits and the screen shows dark and bright stripes. The waves from the two slits show **interference**: where crest meets crest the light is bright; where crest meets trough, darkness. This **double-slit** experiment convinced physicists that light travels as a wave.

Economies swing through the **business cycle**. In a **boom**, jobs are easy to find and firms invest; then demand cools and growth slows, until a **recovery** starts the cycle again.

Talk about it 说一说:

1. Why store a student's name once, in one table, instead of in every class list?
2. Two waves meet and produce darkness. Explain how this is possible.

Physics

Topic 9 · Electricity

 coulomb 库仑			
/ˈkuːlɒm/			
 number density 数密度			
/ˈnʌmbə ˈdensɪti/			
 drift velocity 漂移速度			
/drɪft vəˈlesɪti/			

 potential difference 电势差			
<i>/pə'tenʃl 'dɪfrəns/</i>			
 volt 伏特			
<i>/vəʊlt/</i>			
 electromotive force 电动势			
<i>/ɪˌlektərəʊ'məʊtɪv fɔːs/</i>			
 resistance 电阻			
<i>/rɪ'zɪstəns/</i>			
 ohm 欧姆			
<i>/əʊm/</i>			
 Ohm's law 欧姆定律			
<i>/əʊmz lɔː/</i>			
 filament lamp 灯丝灯泡			
<i>/fɪləmənt læmp/</i>			
 diode 二极管			
<i>/ˈdaɪəʊd/</i>			
 resistivity 电阻率			
<i>/rɪ'zɪ'stɪvəti/</i>			
 insulator 绝缘体			
<i>/ɪn'sjuːləta/</i>			
 lattice vibration 晶格振动			
<i>/ˈlætɪs vaɪ'breɪʃn/</i>			
 scatters 散射			
<i>/ˈskætaɪz/</i>			
 light-dependent resistor 光敏电阻			
<i>/laɪt dɪ'pendənt rɪ'zɪstə/</i>			
 light intensity 光强			
<i>/laɪt ɪn'tensɪti/</i>			
 thermistor 热敏电阻			
<i>/θɜːmɪstə/</i>			

 negative temperature coefficient 负温度系数			
<i>/ˌnegətɪv ˈtemprɪtʃə ˌkəʊlɪfɪjənt/</i>			
 potential divider 分压器			
<i>/pə'tenʃl dɪ'vaɪdə/</i>			

Chemistry

Topics 12–13 · Nitrogen and sulfur, An introduction to AS Level organic chemistry

 exhaust gases 尾气			
<i>/eg'zɔːst 'gæsɪz/</i>			
 photochemical smog 光化学烟雾			
<i>/fəʊtəʊ'kemɪkl smɒg/</i>			
 acid rain 酸雨			
<i>/ˈæsɪd reɪn/</i>			
 sulfur dioxide 二氧化硫			
<i>/ˈsʌlfəː daɪ'ɒksaɪd/</i>			
 hydrocarbon 碳氢化合物			
<i>/ˈhaɪdrəkaʊːbən/</i>			
 alkane 烷烃			
<i>/ˈælkəɪn/</i>			
 functional group 官能团			
<i>/ˈfʌŋkʃənəl gruːp/</i>			
 general formula 通式			
<i>/ˈdʒenərəl 'fɔːmjʊlə/</i>			
 structural formula 结构式			
<i>/ˈstrʌktʃərəl 'fɔːmjʊlə/</i>			
 displayed formula 展开式			
<i>/dɪ'spleɪd 'fɔːmjʊlə/</i>			
 skeletal formula 骨架式			
<i>/ˈskeɪtl 'fɔːmjʊlə/</i>			
 nomenclature 命名法			
<i>/nə'menklətʃə/</i>			

 homologous series 同系列			
<i>/hə'mɒləgəs 'siəri:z/</i>			
 saturated 饱和			
<i>/'sætʃəreɪtɪd/</i>			
 unsaturated 不饱和			
<i>/ʌn'sætʃəreɪtɪd/</i>			
 homolytic fission 均裂			
<i>/'hɒmə'lɪtɪk 'fɪʃn/</i>			
 heterolytic fission 异裂			
<i>/'hetrə'lɪtɪk 'fɪʃn/</i>			
 nucleophile 亲核试剂			
<i>/'nju:kləfaɪl/</i>			

Biology

Topic 7 · Transport in plants

 phloem 韧皮部			
<i>/'fləʊɪm/</i>			
 assimilate 同化物			
<i>/'ə'sɪmɪleɪt/</i>			
 transverse section 横切面			
<i>/'træns'vɜ:s 'sekʃn/</i>			
 dicotyledonous plant 双子叶植物			
<i>/'dɪkəti'lɪdʌnəs plənt/</i>			
 vessel 导管			
<i>/'vesl/</i>			
 lignin 木质素			
<i>/'lɪgnɪn/</i>			
 sieve tube 筛管			
<i>/'sɪv tjʊ:b/</i>			
 sieve plate 筛板			
<i>/'sɪv pleɪt/</i>			

 companion cell 伴胞			
<i>/kəm'pæniən sel/</i>			
 vascular bundle 维管束			
<i>/'væskjələ 'bʌndl/</i>			
 root hair cell 根毛细胞			
<i>/'ru:t heə sel/</i>			
 apoplast pathway 质外体途径			
<i>/'æpəplæst 'pæθweɪ/</i>			
 symplast pathway 共质体途径			
<i>/'sɪmpləst 'pæθweɪ/</i>			
 endodermis 内皮层			
<i>/'endəʊdəmɪs/</i>			
 Casparian strip 凯氏带			
<i>/'kæ'spiəriən stri:p/</i>			
 suberin 木栓质			
<i>/'sʌbəɪn/</i>			
 transpiration 蒸腾作用			
<i>/'trænspe'reɪʃn/</i>			
 evaporation 蒸发			
<i>/'ɪ,væpə'reɪʃn/</i>			
 water vapour 水蒸气			
<i>/'wɔ:tə 'veɪpə/</i>			
 diffuse 扩散			
<i>/'dɪ'fju:z/</i>			
 stomata 气孔			
<i>/'stəʊmətə/</i>			
 atmosphere 大气			
<i>/'ætmasfɪə/</i>			

Mathematics

Topic 4 · Mechanics

→ displacement 位移

/di'spleɪsmənt/

↷ velocity 速度

/və'lɒsɪti/

↻ acceleration 加速度

/ək'selə'reɪʃn/

⌒ velocity-time graph 速度
时间图

/və'lɒsɪti taɪm græf/

↻ constant acceleration 匀
加速

/ˈkɒnstənt ək'selə'reɪʃn/

↻ momentum 动量

/məʊ'mentəm/

↻ conservation of
momentum 动量守恒

/ˌkɒnsə'veɪʃn ɒv məʊ'mentəm/

🔄 Newton's laws of
motion 牛顿运动定律

/ˈnjuːtɪnz lɔːz ɒv 'məʊʃn/

⚖ mass 质量

/mæs/

⚖ weight 重力

/weɪt/

Further Mathematics

Topic 3 · Further Mechanics

🏹 bounding parabola 包络
抛物线

/ˈbəʊndɪŋ pə'reɪbələ/

□ lamina 薄片

/ˈlæmɪnə/

↕ coplanar forces 共面力

/ˈkəʊˈpleɪnə 'fɔːsɪz/

△ conical pendulum 圆锥摆

/ˈkɒnɪkl 'pendjələm/

↑ normal contact force 法
向接触力

/ˈnɔːml 'kɒntækt fɔːs/

Computer Science

Topics 4–10 · Processor Fundamentals, Algorithm Design and Problem-solving, Data Types and Structures

📄 pseudocode 伪代码

/ˈsuːdəʊkəʊd/

≡ sequence 顺序

/ˈsiːkwəns/

🔍 selection 选择

/sɪˈleɪʃn/

↻ iteration 迭代

/ˌɪtə'reɪʃn/

🔄 loop 循环

/luːp/

= assignment 赋值

/ə'saɪnmənt/

🔗 concatenation 拼接

/kənˌkætəˈneɪʃn/

🏠 structured English 结构
化英语

/ˈstrʌktʃəd ˈɪŋɡlɪʃ/

🔗 flowchart 流程图

/ˈfləʊtʃɑːt/

≡ stepwise refinement 逐步
求精

/ˈstepwaɪz rɪˈfaɪnmənt/

() logic statement 逻辑语句

/ˈlɒdʒɪk 'steɪtmənt/

 precedence 优先级			
<i>/ˈpresɪdəns/</i>			
 De Morgan's law 德摩根定律			
<i>/də ˈmɔːɡənz lɔː/</i>			
 procedure 过程			
<i>/prəˈsiːdʒə/</i>			
 array 数组			
<i>/əˈreɪ/</i>			
 index 索引			
<i>/ˈɪndeks/</i>			
 element 元素			
<i>/ˈelɪmənt/</i>			
 bounds 边界			
<i>/baʊndz/</i>			
 dimension 维度			
<i>/daɪˈmenʃn/</i>			
 linear search 线性查找			
<i>/ˈliːnə sɜːtʃ/</i>			
 file 文件			
<i>/faɪl/</i>			
 text file 文本文件			
<i>/tekst faɪl/</i>			
 end of file 文件结束			
<i>/end ɒv faɪl/</i>			
 Abstract Data Type 抽象数据类型			
<i>/ˈæbstrækt ˈdeɪtə taɪp/</i>			
 stack 栈			
<i>/stæk/</i>			
 LIFO 后进先出			
<i>/ˈlaɪfəʊ/</i>			
 push 入栈			
<i>/pʊʃ/</i>			

 pop 出栈			
<i>/pɒp/</i>			
Economics			
<i>Topic 4 · The macroeconomy</i>			
 consumption 消费			
<i>/kənˈsʌmpʃn/</i>			
 net exports 净出口			
<i>/net ˈeksports/</i>			
 aggregate supply 总供给			
<i>/ˈægrɪgeɪt səˈplaɪ/</i>			
 short-run aggregate supply 短期总供给			
<i>/ʃɔːt rʌn ˈægrɪgeɪt səˈplaɪ/</i>			
 long-run aggregate supply 长期总供给			
<i>/lɒŋ rʌn ˈægrɪgeɪt səˈplaɪ/</i>			
 productive capacity 生产能力			
<i>/prəˈdʌktɪv kəˈpæsɪti/</i>			
 macroeconomic equilibrium 宏观经济均衡			
<i>/ˌmækroːrɪːkəˈnɒmɪk ˌɪkwɪˈlɪbrɪəm/</i>			
 price level 价格水平			
<i>/praɪs ˈlevl/</i>			
 real output 实际产出			
<i>/rɪəl ˈaʊtpʊt/</i>			
 actual growth 实际增长			
<i>/ˈæktʃʊəl grəʊθ/</i>			
 potential growth 潜在增长			
<i>/pəˈtenʃl grəʊθ/</i>			
 productivity 生产率			
<i>/ˌprɒdʌkˈtɪvɪti/</i>			

↺ **business cycle** 经济周期
/ˈbiznəs ˈsaɪkl/

↗ **boom** 繁荣
/buːm/

↘ **recession** 衰退
/rɪˈseʃn/

Morning Reading 晨读

Grade 11 · AS · Week 14

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

What actually flows in a wire? Electrons, each carrying a tiny negative charge. Charge is measured in **coulombs**, and one ampere of current means one coulomb passing every second. Surprisingly, the electrons themselves creep along at a **drift velocity** of less than a millimetre per second; the electric field that pushes them, however, spreads at nearly the speed of light, which is why the lamp lights instantly. A battery provides the push: its **electromotive force** drives charge around the circuit, and the **potential difference** across a component, in **volts**, tells you the energy transferred per coulomb. A **semiconductor** sits between conductor and insulator, and its special behaviour built the modern world.

The labour market has its own flow. **Frictional unemployment** is people between jobs; **structural unemployment** follows when whole industries change and skills no longer match; **seasonal unemployment** comes and goes with harvests and holidays. Meanwhile **inflation** eats quietly at the **purchasing power** of every yuan saved.

Talk about it 说一说:

1. The light comes on instantly, yet electrons crawl. Explain the difference.
2. Which type of unemployment worries you most for your own future? Why?

Physics

Topic 10 · D.C. circuits

🔌 **breadboard** 面包板
/ˈbredbɔːd/

🔍 **multimeter** 万用表
/ˌmʌltiˈmiːtə/

⚡ **internal resistance** 内阻
/ɪnˈtɜːnl rɪˈzɪstəns/

 cell 电池			
/sel/			
 terminal p.d. 端电压			
/ˈtɜːmɪnəl piː ˈdiː/			
 open circuit 开路			
/ˈəʊpən ˈsɜːkɪt/			
 short circuit 短路			
/ʃɔːt ˈsɜːkɪt/			
 ammeter 电流表			
/ˈæmɪtə/			
 voltmeter 电压表			
/ˈvɒltmɪtə/			
 LED 发光二极管			
/ˌel ɪˈdiː/			
 capacitor 电容器			
/ˈkæˈpæsɪtə/			
 fuse 保险丝			
/fjuːz/			
 junction 节点			
/ˈdʒʌŋkʃn/			
 conservation of charge 电荷守恒			
/ˌkɒnsəˈveɪʃn ɒv tʃɑːdʒ/			
 loop 回路			
/luːp/			
 Kirchhoff's first law 基尔霍夫第一定律			
/ˈkɜːkhɒfs fɜːst lɔː/			
 Kirchhoff's second law 基尔霍夫第二定律			
/ˈkɜːkhɒfs ˈsekənd lɔː/			
 rheostat 变阻器			
/ˈriːəstæt/			
 sensor 传感器			
/ˈsensə/			

 transistor 晶体管			
/ˈtrænzɪstə/			
Chemistry			
<i>Topic 13 · An introduction to AS Level organic chemistry</i>			
 electrophile 亲电试剂			
/ˌɪlektərəʊˈfaɪl/			
+ addition 加成			
/əˈdɪʃn/			
 substitution 取代			
/ˌsʌbstɪˈtjuːʃn/			
— elimination 消去			
/ˌɪlɪmɪˈneɪʃn/			
 condensation 缩合			
/kɒndənˈseɪʃn/			
 initiation 引发			
/ˌɪnɪʃiˈeɪʃn/			
 propagation 增长			
/ˌprɒpəˈgeɪʃn/			
 termination 终止			
/ˌtɜːmɪˈneɪʃn/			
 free-radical substitution 自由基取代			
/ˈfriː ˈrædɪkl ˌsʌbstɪˈtjuːʃn/			
+ electrophilic addition 亲电加成			
/ˌɪlektərəʊˈfɪlɪk əˈdɪʃn/			
 nucleophilic substitution 亲核取代			
/ˌnjuːkliəˈfɪlɪk ˌsʌbstɪˈtjuːʃn/			
+ nucleophilic addition 亲核加成			
/ˌnjuːkliəˈfɪlɪk əˈdɪʃn/			
 curly arrow 弯箭头			
/ˈkɜːli ˈæraʊ/			

 cyclic 环状			
/ˈsaɪklɪk/			
 planar 平面			
/ˈpleɪnə/			
 isomerism 异构			
/ˈaɪsəməˈrɪzəm/			
 structural isomerism 结构异构			
/ˈstrʌktʃərəl ˈaɪsəməˈrɪzəm/			
 chain isomerism 链异构			
/tʃeɪn ˈaɪsəməˈrɪzəm/			

Biology

Topics 7–8 · Transport in plants, Transport in mammals

 cohesion 内聚力			
/kəʊˈhɪːʒn/			
 tension 张力			
/ˈtenʃn/			
 adhesion 附着力			
/ədˈhɪːʒn/			
 xerophyte 旱生植物			
/ˈzɪərəʊfaɪt/			
 adapted 适应			
/əˈdæptɪd/			
 cuticle 角质层			
/ˈkjuːtɪkl/			
 source 源			
/sɔːs/			
 sink 库			
/sɪŋk/			
 proton pump 质子泵			
/ˈprəʊtɒn pʌmp/			

 cotransporter protein 协同运输蛋白			
/ˈkɒtrənsˌpɔːtə ˈprəʊtɪn/			
 hydrostatic pressure 静水压			
/ˈhaɪdrəˈstætɪk ˈpreʃə/			
 mass flow 集流			
/mæs ˈfləʊ/			
 blood vessel 血管			
/bləd ˈvesl/			
 heart 心脏			
/hɑːt/			
 double circulation 双循环			
/ˈdʌbl ˌsɜːkjoʊˈleɪʃn/			
 circulatory system 循环系统			
/ˌsɜːkjoʊˈleɪtəri ˈsɪstəm/			
 pulmonary circulation 肺循环			
/ˈpʌlmənəri ˌsɜːkjoʊˈleɪʃn/			
 systemic circulation 体循环			
/sɪˈstemɪk ˌsɜːkjoʊˈleɪʃn/			
 artery 动脉			
/ˈɑːtəri/			
 arteriole 小动脉			
/ɑːˈtɪəriəʊl/			
 capillary 毛细血管			
/kəˈpɪləri/			
 venule 小静脉			
/ˈvenjuːl/			

Mathematics

Topic 4 · Mechanics

 tension 张力			
/ˈtɛnʃn/			
 inclined plane 斜面			
/ɪnˈklaɪnd pleɪn/			
 connected particles 连接质点			
/kəˈnektɪd ˈpɑːtɪklz/			
 work done 功			
/wɜːk dʌn/			
 kinetic energy 动能			
/kɪˈnetɪk ˈenədʒi/			
 gravitational potential energy 重力势能			
/ˌɡrævɪˈteɪʃənl pəˈtɛnʃl ˈenədʒi/			
 conservation of energy 能量守恒			
/ˌkɒnsəˈveɪʃn ɒv ˈenədʒi/			
 power 功率			
ˈpaʊə/			
 limiting equilibrium 极限平衡			
/ˈlɪmɪtɪŋ ɪˌkwɪˈlɪbrɪəm/			
 deceleration 减速度			
/dɪˌsɛləˈreɪʃn/			

Further Mathematics

Topics 3–4 · Further Mechanics, Further Probability & Statistics

 oblique impact 斜碰撞			
/əˈblɪk ˈɪmpækt/			
 Further Probability & Statistics 进阶概率统计			
/ˈfɜːðə ˌprɒbəˈbɪlɪti ænd stəˈtɪstɪks/			

 probability density function 概率密度函数			
/ˌprɒbəˈbɪlɪti ˈdensɪti ˈfʌŋkʃn/			
 cumulative distribution function 累积分布函数			
/ˈkjuːmjələtɪv ˌdɪstrɪˈbjʊːʃn ˈfʌŋkʃn/			

Computer Science

Topics 5–11 · System Software, Algorithm Design and Problem-solving, Data Types and Structures, Programming

 queue 队列			
/kjuː/			
 FIFO 先进先出			
ˈfaɪfəʊ/			
 enqueue 入队			
/enˈkjuː/			
 dequeue 出队			
/diːˈkjuː/			
 linked list 链表			
/lɪŋkt list/			
 node 节点			
/nəʊd/			
 pointer 指针			
ˈpɔɪntə/			
 traverse 遍历			
/trəˈvɜːs/			
 underflow 下溢			
/ˌʌndəˈfləʊ/			
 circular array 循环数组			
ˈsɜːkjələ əˈreɪ/			
 free list 空闲列表			
/friː list/			
 record structure 记录结构			
ˈrekɔːd ˈstrʌktʃə/			

↕ bubble sort 冒泡排序			
<i>/ˈbʌbl sɔ:t/</i>			
(×) variables 变量			
<i>/ˈveəriəblz/</i>			
📦 data types 数据类型			
<i>/ˈdeɪtə taɪps/</i>			
🔒 constant 常量			
<i>/ˈkɒnstənt/</i>			
⊕ operators 运算符			
<i>/ˈɒpəreɪtəz/</i>			
📖 library routines 库例程			
<i>/ˈlaɪbrəri ruːtiːnz/</i>			
≡ nested 嵌套			
<i>/ˈnested/</i>			
↺ count-controlled loop 计数循环			
<i>/kaʊnt kənˈtrəʊld lu:p/</i>			
↑ pre-condition loop 前测循环			
<i>/priː kənˈdɪʃn lu:p/</i>			
↓ post-condition loop 后测循环			
<i>/pəʊst kənˈdɪʃn lu:p/</i>			
📐 structured programming 结构化编程			
<i>/ˈstrʌktʃəd ˈprəʊɡræmɪŋ/</i>			
() parameters 参数			
<i>/pəˈræmɪtəz/</i>			
ƒ function 函数			
<i>/ˈfʌŋkʃn/</i>			
() arguments 实参			
<i>/ˈɑːɡjuzmənts/</i>			
📄 pass by value 传值			
<i>/pæs baɪ ˈvæljuː/</i>			
🔗 pass by reference 传引用			
<i>/pæs baɪ ˈrefrəns/</i>			

Economics			
<i>Topic 4 · The macroeconomy</i>			
↓ slump 萧条			
<i>/slʌmp/</i>			
↗ recovery 复苏			
<i>/rɪˈkʌvəri/</i>			
👤 claimant count 申领救济人数			
<i>/ˈkleɪmənt kaʊnt/</i>			
👤 labour force survey 劳动力调查			
<i>/ˈleɪbə fɔːs ˈsɜːveɪ/</i>			
👤 labour force 劳动力			
<i>/ˈleɪbə fɔːs/</i>			
↔ frictional unemployment 摩擦性失业			
<i>/ˈfrɪkʃənəl ənemˈplɔɪmənt/</i>			
👤 structural unemployment 结构性失业			
<i>/ˈstrʌktʃərəl ənemˈplɔɪmənt/</i>			
↺ cyclical unemployment 周期性失业			
<i>/ˈsaɪklɪkəl ənemˈplɔɪmənt/</i>			
🌞 seasonal unemployment 季节性失业			
<i>/ˈsiːzənəl ənemˈplɔɪmənt/</i>			
↗ inflation 通货膨胀			
<i>/ɪnˈfleɪʃn/</i>			
👤 purchasing power 购买力			
<i>/ˈpɜːtʃɪsɪŋ ˈpaʊə/</i>			
↘ deflation 通货紧缩			
<i>/dɪˈfleɪʃn/</i>			
↘ disinflation 反通货膨胀			
<i>/dɪsɪnˈfleɪʃn/</i>			

 **consumer price index** 消
费者价格指数

/kən'su:mə prais 'indeks/

 **weight** 权重

/weit/

Morning Reading 晨读

Grade 11 · AS · Week 15

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Before writing code, a programmer writes a plan. **Pseudocode** looks like simple English but has the shape of a program: INPUT the marks, IF a mark is over 50 THEN count it, OUTPUT the total. Every program is built from just three shapes: **sequence** (one step after another), **selection** (choosing a path), and **iteration** (a **loop** repeating steps). Complex problems are cut into smaller pieces first, a method called **stepwise refinement**: plan the trip, then plan each day, then each morning. Choosing the right **data type** matters too: whole numbers, decimals, text, or true/false.

In the electronics lab you built a **potential divider**: two resistors sharing a voltage. Replace one with a **thermistor** and the output voltage changes with temperature, the heart of a thermostat. Replace it with a **light-dependent resistor** and you have built the sensor that switches streetlights on at dusk.

Governments plan too. **Fiscal policy** sets taxes and spending; spend more than you collect and there is a **budget deficit**, which adds to the **national debt**.

Talk about it 说一说:

1. Write pseudocode, three lines or more, for making instant noodles.
2. A streetlight turns on at dusk by itself. Explain the chain: light, sensor, switch.

Physics

Topics 3–11 · Dynamics, D.C. circuits, Particle physics

 comparator 比较器			
<i>/kəm'pæreɪtə/</i>			
 threshold 阈值			
<i>/θrefəʊld/</i>			
 potentiometer 电位差计			
<i>/pə'tenti'ɒmɪtə/</i>			
 jockey 滑动触头			
<i>/dʒɒki/</i>			
 galvanometer 检流计			
<i>/gælva'nɒmɪtə/</i>			
 null method 零点法			
<i>/nʌl 'meθəd/</i>			
 alpha particle α 粒子			
<i>/'ælfə 'pɑ:tɪkl/</i>			
 deflection 偏转			
<i>/dɪ'flekʃn/</i>			
 nucleus 原子核			
<i>/'nju:klɪəs/</i>			
 proton 质子			
<i>/'prəʊtɒn/</i>			
 neutron 中子			
<i>/'nju:trɒn/</i>			
 nuclide 核素			
<i>/'nju:klɪəd/</i>			
 proton number 质子数			
<i>/'prəʊtɒn 'nʌmbə/</i>			
 nucleon number 核子数			
<i>/'nju:klɪən 'nʌmbə/</i>			
 nucleon 核子			
<i>/'nju:klɪən/</i>			

 isotope 同位素			
<i>/'aɪsətaɒp/</i>			
 unified atomic mass unit 统一原子质量单位			
<i>/'ju:nɪfaɪd ə'tɒmɪk mæs 'ju:nɪt/</i>			
 radiation 辐射			
<i>/'reɪdɪ'eɪʃn/</i>			
 radioactive 放射性			
<i>/'reɪdɪəʊ'æktɪv/</i>			
 ionising 电离			
<i>/'aɪənaɪzɪŋ/</i>			

Chemistry

Topics 13–14 · An introduction to AS Level organic chemistry, Hydrocarbons

 positional isomerism 位置异构			
<i>/'pə'zɪʃənəl 'aɪsəməraɪzəm/</i>			
 functional group isomerism 官能团异构			
<i>/'fʌŋkʃənəl grʊp 'aɪsəməraɪzəm/</i>			
 stereoisomerism 立体异构			
<i>/'sterɪəʊaɪsəməraɪzəm/</i>			
 geometrical isomerism 几何异构			
<i>/'dʒɪ:təʊ'metrɪkl 'aɪsəməraɪzəm/</i>			
 restricted rotation 受限旋转			
<i>/'rɪ'strɪktɪd rəʊ'teɪʃn/</i>			
 cis 顺式			
<i>/sɪs/</i>			
 trans 反式			
<i>/trænz/</i>			
 optical isomerism 旋光异构			
<i>/'ɒptɪkl 'aɪsəməraɪzəm/</i>			

 chiral 手性	_____	_____	_____
/ˈkaɪrəl/			
 chiral centre 手性中心	_____	_____	_____
/ˈkaɪrəl ˈsentə/			
 enantiomers 对映体	_____	_____	_____
/eˈnæntiəməz/			
+ hydrogenation 氢化	_____	_____	_____
/haɪˈdrədʒəneɪʃn/			
 alkene 烯烃	_____	_____	_____
/ˈælkɪn/			
 cracking 裂化	_____	_____	_____
/ˈkrækɪŋ/			
 combustion 燃烧	_____	_____	_____
/kəmˈbʌstʃn/			
 complete combustion 完全燃烧	_____	_____	_____
/kəmˈpli:t kəmˈbʌstʃn/			
 incomplete combustion 不完全燃烧	_____	_____	_____
/ɪŋkəmˈpli:t kəmˈbʌstʃn/			
 carbon monoxide 一氧化碳	_____	_____	_____
/ˈkɑːbən mʌˈnɒksaɪd/			

Biology

Topic 8 · Transport in mammals

 vein 静脉	_____	_____	_____
/veɪn/			
 pulmonary artery 肺动脉	_____	_____	_____
/ˈpʌlmənəri ˈɑːtəri/			
 pulmonary vein 肺静脉	_____	_____	_____
/ˈpʌlmənəri veɪn/			
 aorta 主动脉	_____	_____	_____
/eɪˈɔːtə/			

 vena cava 腔静脉	_____	_____	_____
/ˈviːnə ˈkɑːvə/			
 muscle 肌肉	_____	_____	_____
/ˈmʌsl/			
 elastic 弹性	_____	_____	_____
/ɪˈlæstɪk/			
 lumen 管腔	_____	_____	_____
/ˈluːmən/			
 valve 瓣膜	_____	_____	_____
/vælv/			
 red blood cell 红细胞	_____	_____	_____
/red bləd sel/			
 monocyte 单核细胞	_____	_____	_____
/ˈmɒnəsaɪt/			
 neutrophil 中性粒细胞	_____	_____	_____
/ˈnjuːtrəfɪl/			
 lymphocyte 淋巴细胞	_____	_____	_____
/ˈlɪmfəsaɪt/			
 plasma 血浆	_____	_____	_____
/ˈplæzmə/			
 tissue fluid 组织液	_____	_____	_____
/ˈtɪʃuː ˈfluːɪd/			
 oxygen dissociation curve 氧解离曲线	_____	_____	_____
/ˈɒksɪdʒn dɪˌsəʊsiˈeɪʃn kɜːv/			
 saturation 饱和度	_____	_____	_____
/ˌsætʃəˈreɪʃn/			
 partial pressure 分压	_____	_____	_____
/ˈpɑːʃl ˈpreʃə/			
 Bohr shift 波尔位移	_____	_____	_____
/ˈbəʊə ʃɪft/			
 carbonic anhydrase 碳酸酐酶	_____	_____	_____
/kɑːˈbɒnɪk ˈænhaidreɪz/			

± **hydrogencarbonate ion**
碳酸氢根离子
/ˈhaɪdrədʒenkaːbonetˈaɪən/

± **chloride ion** 氯离子
/ˈklɔːraɪdˈaɪən/

Mathematics

Topics 4–5 · Mechanics, Probability & Statistics 1

✍ **thrust** 推力
/θrʌst/

⇄ **air resistance** 空气阻力
/eəˈrɪˈzɪstəns/

📊 **Probability & Statistics**
概率统计
/ˌprɒbəˈbɪlɪtɪ ænd stəˈtɪstɪks/

🌿 **stem-and-leaf diagram**
茎叶图
/stem ænd liːfˈdaɪəgræm/

📦 **box-and-whisker plot** 箱线图
/bɒks ænd ˈwɪskəˌplɒt/

📊 **histogram** 直方图
/ˈhɪstəgræm/

↗ **cumulative frequency** 累积频数
/ˈkjuːmjələtɪv ˈfriːkwənsi/

≡ **central tendency** 集中趋势
/ˈsentrəl ˈtendənsi/

— **mean** 平均数
/miːn/

≡ **median** 中位数
/ˈmiːdiən/

Further Mathematics

Topic 4 · Further Probability & Statistics

% **percentiles** 百分位数
/pəˈsentailz/

≡ **median** 中位数
/ˈmiːdiən/

⚖ **hypothesis test** 假设检验
/haɪˈpəθəsɪs test/

[] **confidence interval** 置信区间
/ˈkɒnfɪdəns ˈɪntəvl/

Computer Science

Topics 11–12 · Programming, Software Development

□ **local variable** 局部变量
/ˈləkl ˈveəriəbl/

⊕ **global variable** 全局变量
/ˈgləʊbl ˈveəriəbl/

📍 **scope** 作用域
/skəʊp/

✍ **signature** 签名
/ˈsɪgnɪtʃə/

📦 **invariant** 不变量
/ɪnˈveəriənt/

🔄 **development life cycle**
开发生命周期
/dɪˈveləpmənt laɪf ˈsaɪkl/

📋 **requirements** 需求
/rɪˈkwəɪmənts/

🌊 **waterfall** 瀑布模型
/ˈwɔːtəfɔːl/

🔄 **iterative model** 迭代模型
/ɪˈtərətɪv ˈmɒdl/

 Rapid Application Development 快速应用开发			
<i>/ˈræpid ˌæplɪˈkeɪʃn dɪˈveləpmənt/</i>			
 prototype 原型			
<i>/ˈprəʊtəʊtaɪp/</i>			
 Agile 敏捷			
<i>/ˈædʒaɪl/</i>			
 implementation 实现			
<i>/ˌɪmplɪmənˈteɪʃn/</i>			
 maintenance 维护			
<i>/ˈmeɪntənəns/</i>			
 structure chart 结构图			
<i>/ˈstrʌktʃə tʃɑ:t/</i>			
 state-transition diagram 状态转换图			
<i>/steɪt trænˈsɪʃn ˈdaɪəgræm/</i>			
 states 状态			
<i>/steɪts/</i>			
 syntax error 语法错误			
<i>/ˈsɪntæks ˈerə/</i>			
 run-time error 运行时错误			
<i>/rʌn taɪm ˈerə/</i>			
 logic error 逻辑错误			
<i>/ˈlɒdʒɪk ˈerə/</i>			
 dry run 手工跟踪			
<i>/draɪ rʌn/</i>			
 walkthrough 走查			
<i>/ˈwɔ:kθru:/</i>			
 white-box testing 白盒测试			
<i>/waɪt bɒks ˈtestɪŋ/</i>			
 black-box testing 黑盒测试			
<i>/blæk bɒks ˈtestɪŋ/</i>			

 integration testing 集成测试			
<i>/ˌɪntɪˈɡreɪʃn ˈtestɪŋ/</i>			
 alpha testing α 测试			
<i>/ˈælfə ˈtestɪŋ/</i>			
 beta testing β 测试			
<i>/ˈbi:tə ˈtestɪŋ/</i>			
 acceptance testing 验收测试			
<i>/əkˈseptəns ˈtestɪŋ/</i>			
Economics			
<i>Topics 4-5 · The macroeconomy, Government macroeconomic intervention</i>			
 demand-pull inflation 需求拉动型通货膨胀			
<i>/dɪˈmænd pɒl ɪnˈfleɪʃn/</i>			
 cost-push inflation 成本推动型通货膨胀			
<i>/kɒst pʊʃ ɪnˈfleɪʃn/</i>			
 price stability 物价稳定			
<i>/praɪs stəˈbɪlɪti/</i>			
 full employment 充分就业			
<i>/fʊl emˈplɔɪmənt/</i>			
 balance of payments 国际收支			
<i>/ˈbæləns ɒv ˈpeɪmənts/</i>			
 redistribution of income 收入再分配			
<i>/rɪˌdɪstrɪˈbju:ʃn ɒv ˈɪŋkəm/</i>			
 conflict 冲突			
<i>/ˈkɒnflɪkt/</i>			
 demand-side policies 需求侧政策			
<i>/dɪˈmænd saɪd ˈpɒlɪsɪz/</i>			

 **fiscal policy** 财政政策
/ˈfɪskl ˈpɒlɪsi/

 **budget** 预算
/ˈbʌdʒɪt/

 **budget deficit** 预算赤字
/ˈbʌdʒɪt ˈdefɪsɪt/

 **national debt** 国债
/ˈnæʃənəl det/

 **budget surplus** 预算盈余
/ˈbʌdʒɪt ˈsʌrplʌs/

 **direct tax** 直接税
/daɪˈrekt tæks/

 **proportional tax** 比例税
/prəˈpɔːʃənəl tæks/

Morning Reading 晨读

Grade 11 · AS · Week 16

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Look at the canteen at noon: the first student in the line is served first. Computer scientists call this structure a **queue**: first in, first out, or **FIFO**. New people **enqueue** at the back; the server **dequeues** from the front. Now look at the clean plates: the last plate placed on the pile is the first one taken. That is a **stack**: last in, first out, **LIFO**. You **push** a plate on top and **pop** it off again. Your browser's back button is a stack of pages; a printer's waiting list is a queue. Choosing the right structure is half of programming.

In the circuits lab you used **Kirchhoff's first law**: the current flowing into a **junction** equals the current flowing out, because charge is never lost. A **capacitor** stores charge briefly, smoothing the flow.

When inflation rises, the **central bank** tightens **monetary policy**: a higher **interest rate** makes borrowing dearer, cooling spending. **Supply-side policy** works slower but deeper, through training, technology and **infrastructure**.

Talk about it 说一说:

1. Find two queues and two stacks in your daily life.
2. Why does raising the interest rate slow down price rises? Trace the steps.

Physics

Topic 11 · Particle physics

 discrete 分立			
<i>/di'skri:t/</i>			
 cloud chamber 云室			
<i>/klaʊd 'tʃeɪmbə/</i>			
 beta particle β 粒子			
<i>/'bi:tə 'pɑ:tɪkl/</i>			
 positron 正电子			
<i>/'pɒzɪtrɒn/</i>			
 continuous 连续			
<i>/kən'tɪnju:əs/</i>			
 photon 光子			
<i>/'fəʊtɒn/</i>			
 attenuated 衰减			
<i>/ə'tenju:etɪd/</i>			
 gamma ray γ 射线			
<i>/'gæmə reɪ/</i>			
 daughter nucleus 子核			
<i>/'dɔ:tə 'nju:kliəs/</i>			
 excited state 激发态			
<i>/ek'saɪtɪd steɪt/</i>			
 antiparticle 反粒子			
<i>/'æntɪ'pɑ:tɪkl/</i>			
 antineutrino 反中微子			
<i>/'æntɪnju:'tri:nəʊ/</i>			
 neutrino 中微子			
<i>/'nju:'tri:nəʊ/</i>			
 quark 夸克			
<i>/kwɑ:k/</i>			
 flavours 味			
<i>/'fleɪvəz/</i>			

 antiquark 反夸克			
<i>/'æntɪkwɑ:k/</i>			
 hadrons 强子			
<i>/'hædrɒnz/</i>			
 baryons 重子			
<i>/'bæriɒnz/</i>			
 mesons 介子			
<i>/'mi:zɒnz/</i>			
 leptons 轻子			
<i>/'leptonz/</i>			

Chemistry

Topics 14–15 · Hydrocarbons, Halogen compounds

 ultraviolet light 紫外线			
<i>/'ɒltrə'vaɪəlaɪt laɪt/</i>			
 crude oil 原油			
<i>/'kru:ɪd ɔɪl/</i>			
 fraction 馏分			
<i>/'frækʃn/</i>			
 halogenoalkane 卤代烷			
<i>/'heɪlədʒnəʊlkeɪn/</i>			
 dehydration 脱水			
<i>/'di:haɪ'dreɪʃn/</i>			
 alcohol 醇			
<i>/'ælkəhɒl/</i>			
 steam 水蒸气			
<i>/'sti:m/</i>			
 diol 二醇			
<i>/'di'ɒl/</i>			
 bromine water 溴水			
<i>/'brəʊmaɪn 'wɔ:tə/</i>			
 addition polymerisation 加成聚合			
<i>/'ə'dɪʃn ,pɒlɪməraɪ'zeɪʃn/</i>			

 polymer 聚合物			
/ˈpɒlɪmə/			
 carbocation 碳正离子			
/ˌkɑːbəˈkeɪʃn/			
 inductive effect 诱导效应			
/ɪnˈdʌktɪv iˈfekt/			
 Markovnikov's rule 马氏规则			
/ˈmɑːkəvnikɒvz ruːl/			
 primary 伯			
/ˈpraɪməri/			
 secondary 仲			
/ˈsekəndəri/			
 tertiary 叔			
/ˈtɜːʃəri/			
 nitrile 腈			
/ˈnaɪtrɪl/			

Biology

Topics 8–9 · Transport in mammals, Gas exchange

 chloride shift 氯转移			
/ˈklɔːraɪd ʃɪft/			
 haemoglobin 血红蛋白			
/ˌhiːməˈgləʊˈbɪnɪk ˈæsɪd/			
 carbamino 氨基			
/ˌkɑːbəˈmɪnəʊˈhiːməˈgləʊbɪn/			
 atrium 心房			
/ˈeɪtriəm/			
 ventricle 心室			
/ˈventrɪkl/			
 cardiac cycle 心动周期			
/ˈkɑːdiæk ˈsaɪkl/			

 systole 收缩期			
/ˈsɪstəʊl/			
 diastole 舒张期			
/ˈdaɪəstəʊl/			
 sinoatrial node 窦房结			
/sɪˈnəʊtriəl nɒd/			
 atrioventricular node 房室结			
/ˌeɪtrɪˌəʊvənˈtrɪkjələ nɒd/			
 Purkyne tissue 浦肯野组			
/ˈpɜːkəm ˈtʃuː/			
 gas exchange 气体交换			
/gæs eksˈtʃeɪndʒ/			
 trachea 气管			
/trəˈkiə/			
 bronchus 支气管			
/ˈbrɒŋkəs/			
 bronchiole 细支气管			
/ˈbrɒŋkiəʊl/			
 alveoli 肺泡			
/ˈælviəli/			
 lungs 肺			
/lʌŋz/			
 cartilage 软骨			
/ˈkɑːtɪlɪdʒ/			
 ciliated epithelium 纤毛上皮			
/ˈsɪliəteɪd ˌepɪˈθiːliəm/			
 mucus 黏液			
/ˈmjuːkəs/			
 goblet cell 杯状细胞			
/ˈɡʊblət sel/			
 mucous gland 黏液腺			
/ˈmjuːkəs glænd/			

Mathematics

Topic 5 · Probability & Statistics 1

 mode 众数			
<i>/maod/</i>			
 variation 离散程度			
<i>/,veəri'eɪʃn/</i>			
 range (of data) 极差			
<i>/reɪndʒ/</i>			
 interquartile range 四分位距			
<i>/,ɪntə'kwɔ:təɪl reɪndʒ/</i>			
 standard deviation 标准差			
<i>/ˈstændəd ,di:vɪ'eɪʃn/</i>			
 variance 方差			
<i>/ˈveəriəns/</i>			
 permutation 排列			
<i>/,pɜ:mju:'teɪʃn/</i>			
 combination 组合			
<i>/,kɒmbɪ'neɪʃn/</i>			
 mutually exclusive events 互斥事件			
<i>/ˈmju:tʃu:əli eks'klu:sɪv i'vents/</i>			
 independent events 独立事件			
<i>/,ɪndɪ'pendənt i'vents/</i>			

Further Mathematics

Topic 4 · Further Probability & Statistics

 pooled estimate 合并估计			
<i>/pu:ld 'estɪmət/</i>			
 chi-squared test 卡方检验			
<i>/kaɪ skweəd test/</i>			
 theoretical distribution 理论分布			
<i>/θɪə'retɪkl ,dɪstri'bju:ʃn/</i>			
 degrees of freedom 自由度			
<i>/di'grɪz ov 'fri:dəm/</i>			

Computer Science

Topics 1–12 · Information representation, Communication, Hardware, System Software, Algorithm Design and Problem-solving, Data Types and Structures, Programming, Software Development

 stub 桩			
<i>/stab/</i>			
 test strategy 测试策略			
<i>/test 'strætədʒi/</i>			
 test plan 测试计划			
<i>/test plæn/</i>			
 normal data 正常数据			
<i>/ˈnɔ:ml 'deɪtə/</i>			
 abnormal data 异常数据			
<i>/əbˈnɔ:ml 'deɪtə/</i>			
 boundary data 边界数据			
<i>/ˈbaʊndəri 'deɪtə/</i>			
 perfective maintenance 完善性维护			
<i>/pə'fektɪv 'meɪntənəns/</i>			
 adaptive maintenance 适应性维护			
<i>/ə'dæptɪv 'meɪntənəns/</i>			

	corrective maintenance 纠正性维护			
	/kə'rektiv 'meɪntənəns/			
	regression testing 回归测试			
	/rɪ'ɡrefn 'testɪŋ/			
	extreme data 极端数据			
	/ek'stri:m 'deta/			
	nibbles 半字节			
	/'nɪblz/			
	drawing objects 绘图对象			
	/'drɔ:ɪŋ 'ɒbdʒekts/			
	primitives 图元			
	/'prɪmɪtɪvz/			
	sample resolution 采样分辨率			
	/'sæmpl ,reza'lʊ:ʃn/			
	bridge 网桥			
	/brɪdʒ/			
	filament 塑料丝			
	/'fɪləmənt/			
	diaphragm 膜片			
	/'daɪəfræm/			
	lands 平台			
	/'ləndz/			
	multitasking 多任务处理			
	/'mʌltɪtæskɪŋ/			
	interrupts 中断			
	/'ɪntərəpts/			
	signatures 签名			
	/'sɪgnɪtʃəz/			
	portable 可移植的			
	/'pɔ:təbl/			
	counter 计数器			
	/'kaʊntə/			

	lower bound 下界			
	/'ləʊə baʊnd/			
	upper bound 上界			
	/'ʌpə baʊnd/			
	insert 附页			
	/'ɪnsɜ:t/			
	trace table 跟踪表			
	/'treɪs 'teɪbl/			

Economics

Topics 5-6 · Government macroeconomic intervention, International economic issues

	regressive tax 累退税			
	/'rɪɡresɪv tæks/			
	expansionary 扩张性			
	/'ek'spænjənəri/			
	contractionary 紧缩性			
	/'kən'trækʃənəri/			
	crowding out 挤出效应			
	/'kraʊdɪŋ aʊt/			
	monetary policy 货币政策			
	/'manɪtəri 'pɒlɪsi/			
	central bank 中央银行			
	/'sentrəl bæŋk/			
	interest rate 利率			
	/'ɪntrest reɪt/			
	money supply 货币供给			
	/'mʌni sə'plaɪ/			
	transmission mechanism 传导机制			
	/'træn'smɪʃn 'mekənɪzəm/			
	supply-side policy 供给侧政策			
	/'sə'plaɪ saɪd 'pɒlɪsi/			

 privatisation 私有化			
/ˌpraɪvətəɪˈzeɪʃn/			
 deregulation 放松管制			
/diːˌregjəˈleɪʃn/			
 training 培训			
/ˈtreɪnɪŋ/			
 infrastructure 基础设施			
/ˈɪnfrastrʌktʃə/			
 international trade 国际贸易			
/ˌɪntəˈnæʃənəl treɪd/			

Morning Reading 晨读

Grade 11 · AS · Week 17

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

Why does China build high-speed trains while another country grows coffee? Because countries, like people, gain when they **specialise**. A country has an **absolute advantage** when it can make something using fewer resources than others. But the deeper idea is **comparative advantage**: even a country that is worse at everything should make what it gives up least to produce, and trade for the rest. Trade makes both sides better off, which is why economists frown when **protectionism** returns: a **tariff** taxes imports, a **quota** limits them, and consumers quietly pay the bill. Defenders reply that a young **infant industry** may need shelter before it can compete.

Programmers use the same principle: divide the work. A **function** is a small, named piece of a program that does one job well. You call it with **arguments**, it works with its own **local variables**, and it hands back a result. Big programs are built from small functions, each written once and reused everywhere, the code version of specialisation.

Talk about it 说一说:

1. Your friend is faster than you at both maths and English homework. Can trading tasks still help you both?
2. Name three things a function and a factory worker have in common.

Physics

Topics 1–11 · Physical quantities and units, Kinematics, Dynamics, Forces, density and pressure, Waves, Superposition, Electricity, Particle physics

 intercept 截距			
<i>/ˌɪntəˈsept/</i>			
 division 分度			
<i>/dɪˈvɪʒn/</i>			
 reaction time 反应时间			
<i>/rɪˈækʃn taɪm/</i>			
 half the range 极差的一半			
<i>/hɑːf ðə reɪndʒ/</i>			
 percentage difference 百分比差异			
<i>/pəˈsentɪdʒ ˈdɪfrəns/</i>			
 same number of significant figures 有效数字			
<i>/seɪm ˈnʌmbə ɒv sɪɡˈnɪfɪkənt ˈfɪɡəz/</i>			
 error bar 误差棒			
<i>ˈerə bɑː/</i>			
 line of best fit 最佳拟合直线			
<i>/laɪn ɒv best fɪt/</i>			
 worst acceptable line 最差可接受直线			
<i>/wɜːst əkˈseptəbl laɪn/</i>			
 scale drawing 按比例作图			
<i>/skeɪl ˈdrɔːɪŋ/</i>			
 acceleration of free fall 自由落体加速度			
<i>/əkˌseləˈreɪʃn ɒv frɪː fɔːl/</i>			
 light gates 光电门			
<i>/laɪt ɡeɪts/</i>			
 viscosity 黏度			
<i>/vɪˈskɒsɪti/</i>			

 plumb line 铅垂线			
<i>/plʌm laɪn/</i>			
 propagates 传播			
<i>ˈprɒpəɡeɪts/</i>			
 electromagnetic waves 电磁波			
<i>/ɪˌlektroʊmægˈnetɪk weɪvz/</i>			
 waves 波			
<i>/weɪvz/</i>			
 progressive waves 行波			
<i>/prəˈɡresɪv weɪvz/</i>			
 holes 空穴			
<i>/həʊlz/</i>			
 alpha particles α 粒子			
<i>ˈælfə ˈpɑːtɪklz/</i>			

Chemistry

Topics 14–18 · Hydrocarbons, Halogen compounds, Hydroxy compounds, Carbonyl compounds, Carboxylic acids and derivatives

 amine 胺			
<i>ˈæmaɪn/</i>			
 silver nitrate 硝酸银			
<i>ˈsɪlvə ˈnaɪtreɪt/</i>			
 transition state 过渡态			
<i>ˈtrænˈsɪʃn steɪt/</i>			
 aldehyde 醛			
<i>ˈældɪhaɪd/</i>			
 ketone 酮			
<i>ˈketəʊn/</i>			
 carboxylic acid 羧酸			
<i>ˈkɑːbɒkˈsɪlɪk ˈæsɪd/</i>			
 ester 酯			
<i>ˈesta/</i>			

 distillation 蒸馏			
<i>/dɪstɪˈleɪʃn/</i>			
 reflux 回流			
<i>/rɪˈflʌks/</i>			
 tri-iodomethane 三碘甲烷			
<i>/traɪ ˈaɪədaʊmθeɪn/</i>			
 acidity 酸性			
<i>/æˈsɪdɪti/</i>			
 carbonyl compound 羰基化合物			
<i>/ˈkəːbənaɪl ˈkɒmpaʊnd/</i>			
 carbonyl 羰基			
<i>/ˈkəːbənaɪl/</i>			
 hydrogen cyanide 氰化氢			
<i>/ˈhaɪdrədʒn ˈsaɪənaɪd/</i>			
 hydroxynitrile 羟基腈			
<i>/haɪˈdrɒksɪnaɪtraɪl/</i>			
 Fehling's reagent 斐林试剂			
<i>/ˈfeɪlɪŋz rɪˈeɪdʒənt/</i>			
 Tollens' reagent 托伦试剂			
<i>/ˈtəʊlənz rɪˈeɪdʒənt/</i>			
 esterification 酯化			
<i>/ˌestəˌrɪfɪˈkeɪʃn/</i>			

Biology

Topics 9–10 · Gas exchange, Infectious diseases

 microbe 微生物			
<i>/ˈmaɪkraʊb/</i>			
 smooth muscle 平滑肌			
<i>/smuːð ˈmʌsl/</i>			
 elastic fibre 弹性纤维			
<i>/ɪˈlæstɪk ˈfaɪbə/</i>			

 squamous epithelium 扁平上皮			
<i>/ˈskwɒməs ˌepɪˈθiːliəm/</i>			
 infectious disease 传染病			
<i>/ɪnˈfekʃəs dɪˈziːz/</i>			
 pathogen 病原体			
<i>/ˈpæθədʒn/</i>			
 transmit 传播			
<i>/trænzˈmɪt/</i>			
 cholera 霍乱			
<i>/ˈkɒlərə/</i>			
 contaminated 污染			
<i>/kənˈtæmɪneɪtɪd/</i>			
 faeces 粪便			
<i>/ˈfiːsɪz/</i>			
 malaria 疟疾			
<i>/məˈleəriə/</i>			
 protocist 原生生物			
<i>/ˈprəʊtəʊkɪst/</i>			
 mosquito 蚊子			
<i>/məˈskiːtəʊ/</i>			
 vector 媒介			
<i>/ˈvektə/</i>			
 tuberculosis 结核病			
<i>/ˌtjuːbəkjəˈləʊsɪs/</i>			
 droplet 飞沫			
<i>/ˈdrɒplɪt/</i>			
 AIDS 艾滋病			
<i>/eɪdz/</i>			
 immune system 免疫系统			
<i>/ɪˈmjuːn ˈsɪstəm/</i>			
 vaccine 疫苗			
<i>/vækˈsɪn/</i>			
 insecticide 杀虫剂			
<i>/ɪnˈsektsaɪd/</i>			

 **antibiotic** 抗生素
/ˌæntɪbaɪˈɒtɪk/

 **penicillin** 青霉素
/ˌpenɪˈsɪlɪn/

Mathematics

Topic 5 · Probability & Statistics 1

 **conditional probability**
条件概率
/kənˈdɪʃənəlˌprəbəˈbɪlɪti/

 **discrete random variable** 离散型随机变量
/dɪˈskrɪtˈrændəmˈveəriəbl/

 **probability distribution table** 概率分布表
/ˌprəbəˈbɪlɪtiˌdɪstrɪˈbjʊʃnˈteɪbl/

 **expectation** 期望
/ekspekˈteɪʃn/

 **binomial distribution** 二项分布
/baɪˈnəʊmɪəlˌdɪstrɪˈbjʊʃn/

 **geometric distribution**
几何分布
/dʒiːəˈmetrɪkˌdɪstrɪˈbjʊʃn/

 **normal distribution** 正态分布
/ˈnɔːmlˌdɪstrɪˈbjʊʃn/

 **continuous random variable** 连续型随机变量
/kənˈtɪnjuːəsˈrændəmˈveəriəbl/

 **approximation** 近似
/əˌprɒksɪˈmeɪʃn/

Further Mathematics

Topic 4 · Further Probability & Statistics

 **goodness of fit** 拟合优度
/ˈɡʊdnəs ɒv fɪt/

 **independence** 独立性
/ˌɪndɪˈpendəns/

 **contingency table** 列联表
/kənˈtɪndʒənsɪˈteɪbl/

 **non-parametric test** 非参数检验
/nɒnˌpærəˈmetrɪk test/

Computer Science

Topics 1–11 · Information representation, Communication, Hardware, Processor Fundamentals, System Software, Programming

 **return value** 返回值
/rɪˈtɜːn ˈvæljuː/

 **format** 格式
/ˈfɔːmət/

 **register width** 寄存器宽度
/ˈredʒɪstə wɪθ/

 **arithmetic shift** 算术移位
/ˌæɪrɪθˈmetɪk ʃɪft/

 **frame** 帧
/freɪm/

 **frame rate** 帧率
/freɪm reɪt/

 **Public Switched Telephone Network** 公共交换电话网
/ˈpʌblɪk swɪtʃtˈtelɪfəʊnˈnetwɜːk/

 **public cloud** 公有云
/ˈpʌblɪk klaʊd/

 private cloud 私有云			
/ˈpraɪvət klaʊd/			
 repeater 中继器			
/rɪˈpi:tə/			
 bit rate 比特率			
/bɪt reɪt/			
 dedicated line 专线			
/ˈdedɪkeɪtɪd laɪn/			
 cell phone network 蜂窝网络			
/sel faʊn ˈnetwɜ:k/			
 fuser 定影器			
/ˈfju:sə/			
 digital-to-analogue converter 数模转换器			
/ˈdɪdʒɪtl to ˈænələg kənˈvɜ:tə/			
 actuator arms 磁头臂			
/ˈæktʃu:etə a:mz/			
 floating-gate transistor 浮栅晶体管			
/ˈflaʊtɪŋ geɪt trænˈzɪstə/			
 pits 凹坑			
/pɪts/			
 preset value 预设值			
/ˈpri:set ˈvælju:/			
 operand 操作数			
/ˈɒpərənd/			
 number of cores 核心			
/ˈnʌmbə ʌv kɔ:z/			
 amount of RAM 随机存取存储器			
/əˈmaʊnt ʌv ræm/			
 register transfer notation 寄存器传送记法			
/ˈredʒɪstə ˈtrænsfɜ: nəʊˈteɪʃn/			

 interrupt register 中断寄存器			
/ˈɪntəʁəpt ˈredʒɪstə/			
 opcode 操作码			
/ˈɒpkəʊd/			
 memory protection 内存保护			
/ˈmeməri prəˈtektʃn/			
 scheduling 调度			
/ˈʃedju:lɪŋ/			
 directory 目录			
/daɪˈrektəri/			
Economics			
<i>Topic 6 · International economic issues</i>			
 specialise 专业化			
/ˈspeʃəlaɪz/			
 absolute advantage 绝对优势			
/ˈæbsəlu:t ədˈvæntɪdʒ/			
 comparative advantage 比较优势			
/kəmˈpærətɪv ədˈvæntɪdʒ/			
 terms of trade 贸易条件			
/tɜ:mz ʌv treɪd/			
 protectionism 贸易保护主义			
/prəˈtektʃənɪzəm/			
 tariff 关税			
/ˈtærɪf/			
 quota 配额			
/ˈkwəʊtə/			
 embargo 禁运			
/emˈbɑ:gəʊ/			

 administrative barriers 行政壁垒 <i>/əd'mɪnɪstrətɪv 'bærɪəz/</i>			
 infant industry 幼稚产业 <i>/'ɪnfənt 'ɪndʌstri/</i>			
 dumping 倾销 <i>/'dʌmpɪŋ/</i>			
 retaliation 报复 <i>/'rɪ,tæli'eɪʃn/</i>			
 stakeholder 利益相关者 <i>/'steɪkhaʊldə/</i>			
 current account 经常账户 <i>/'kʌrənt ə'kaʊnt/</i>			

Morning Reading 晨读

Grade 11 · AS · Week 18

Read each word aloud, then copy the English word three times. 朗读每个单词，然后把英语单词抄写三遍。

Reading 阅读

Read the passage aloud twice. 把短文朗读两遍。

How do you know your program is correct? You hunt for errors, and they come in kinds. A **syntax error** breaks the language rules, and the translator refuses to run at all. A **run-time error** appears while the program runs, like dividing by zero. The most dangerous is the **logic error**: the program runs happily and gives the wrong answer. To catch them, testers do a **dry run** on paper, use **white-box testing** to exercise every path inside the code, and **black-box testing** to check inputs against expected outputs without looking inside. Before release come **alpha testing** in the company and **beta testing** with real users.

Chemists identify unknown substances with the same detective spirit. **Infrared spectroscopy** shines light through a sample: each bond absorbs its own frequencies, leaving a fingerprint. **Mass spectrometry** weighs the fragments of a molecule.

One last economic idea for the term: under a **floating exchange rate**, a currency's **appreciation** makes imports cheaper but exports harder to sell. The whole year connects: measure, model, test, and question everything.

Talk about it 说一说:

1. Find the logic error: a program to average two numbers computes $a + b / 2$.
2. Which subject taught you the most surprising idea this term? Explain it in two sentences.

Physics

Topics 2–11 · Kinematics, Dynamics, Forces, density and pressure, Work, energy and power, Deformation of solids, Waves, Superposition, Electricity, D.C. circuits, Particle physics

 isotopes 同位素			
/ˈaɪsəˌtəʊps/			
 graphical methods 图像法			
/ˈɡræfɪkl̩ ˈmeθədz/			
 non-uniform 非均匀			
/nɒn ˈjuːnɪfɔːm/			
 closed vector triangle 矢量三角形			
/ˈklaʊzd ˈvektə ˈtraɪæŋɡl̩/			
 electrical 电能			
/ɪˈlektɹɪkl̩/			
 bungee jumper 蹦极者			
/ˈbʌndʒiː ˈdʒʌmpə/			
 rubber band 橡皮筋			
/ˈrʌbə bænd/			
 elastic hysteresis 弹性滞后			
/ɪˈlæstɪk ˌhɪstəˈrɪːsɪs/			
 Wave motion 波动			
/weɪv ˈməʊʃn/			
 γ-rays γ射线			
/ˈɡæmə reɪz/			
 principle of superposition 叠加			
/ˈprɪnsɪpl̩ ɒv ˌsuːpəˈzɪʃn/			
 semiconductor diode 二极管			
/ˌsemɪkənˈdʌktə ˈdaɪəd/			
 closed loop 回路			
/klaʊzd luːp/			

 balance length 平衡长度			
/ˈbæləns leŋθ/			
 driver cell 驱动电池			
/ˈdraɪvə sel/			
 fundamental particles 基本粒子			
/ˌfʌndəˈmentl̩ ˈpɑːtɪkl̩z/			
 uniform gravitational field 匀强重力场			
/ˈjuːnɪfɔːm ɡrævɪˈteɪʃnəl fiːld/			
 negligible 可忽略的			
/ˈneglɪdʒəbl̩/			
 parabola 抛物线			
/pəˈræbələ/			
 driving force 驱动力			
/ˈdraɪvɪŋ fɔːs/			

Chemistry

Topics 20–22 · Polymerisation, Organic synthesis, Analytical techniques

 monomer 单体			
/ˈmɒnəʊmə/			
 repeat unit 重复单元			
/rɪˈpiːt ˈjuːnɪt/			
 poly(ethene) 聚乙烯			
/ˈpɒli/			
 poly(chloroethene) 聚氯乙烯			
/ˈpɒli/			
 non-biodegradable 不可生物降解			
/nɒn ˌbaɪəʊdɪˈɡreɪdəbl̩/			
 synthetic route 合成路线			
/sɪnˈθetɪk ruːt/			
 reagent 试剂			
/rɪˈeɪdʒənt/			

 by-product 副产品	_____	_____	_____
/baɪ 'prɒdʌkt/			
 infrared spectroscopy 红外光谱	_____	_____	_____
/ˌɪnfra'red spek'trɒskəpi/			
 absorption 吸收	_____	_____	_____
/əb'sɔːpʃn/			
 wavenumber 波数	_____	_____	_____
/ˈweɪvnʌmbə/			
 mass spectrometry 质谱	_____	_____	_____
/məs spek'trɒmətri/			
 mass-to-charge ratio 质荷比	_____	_____	_____
/məs tə tʃɑːdʒ 'reɪʃiəʊ/			
 isotopic abundance 同位素丰度	_____	_____	_____
/aɪsə'tɒpɪk ə'bʌndəns/			
 molecular ion 分子离子	_____	_____	_____
/mə'lekjələ 'aɪɒn/			
 molecular ion peak 分子离子峰	_____	_____	_____
/mə'lekjələ 'aɪɒn piːk/			
 fragmentation 碎裂	_____	_____	_____
/ˌfrægmən'teɪʃn/			
 fragment 碎片	_____	_____	_____
/ˈfrægmənt/			

Biology

Topics 10–11 · Infectious diseases, Immunity

 resistance 耐药性	_____	_____	_____
/rɪ'zɪstəns/			
 phagocyte 吞噬细胞	_____	_____	_____
/ˈfæɡəsait/			
 macrophage 巨噬细胞	_____	_____	_____
/ˈmækrəfəɪdʒ/			

 phagocytosis 吞噬作用	_____	_____	_____
/ˌfæɡəsi'təʊsɪs/			
 self antigen 自身抗原	_____	_____	_____
/self 'æntɪdʒən/			
 non-self antigen 非自身抗原	_____	_____	_____
/nɒn self 'æntɪdʒən/			
 immune response 免疫反应	_____	_____	_____
/ɪ'mjuːn rɪ'spɒns/			
 T-helper cell 辅助性 T 细胞	_____	_____	_____
/tiː 'helpə sel/			
 plasma cell 浆细胞	_____	_____	_____
/ˈplæzmə sel/			
 memory cell 记忆细胞	_____	_____	_____
/ˈmeməri sel/			
 T-killer cell 杀伤性 T 细胞	_____	_____	_____
/tiː 'kɪlə sel/			
 antigen-binding site 抗原结合位点	_____	_____	_____
/ˈæntɪdʒən 'baɪndɪŋ saɪt/			
 variable region 可变区	_____	_____	_____
/ˈveəriəbl 'rɪːdʒn/			
 monoclonal antibody 单克隆抗体	_____	_____	_____
/ˈmɒnəklɒnl 'æntɪbɒdi/			
 hybridoma 杂交瘤	_____	_____	_____
/ˌhaɪbrɪ'dəʊmə/			
 diagnosis 诊断	_____	_____	_____
/ˌdaɪəɡ'nəʊsɪs/			
 active immunity 主动免疫	_____	_____	_____
/ˈæktɪv ɪ'mjuːnɪti/			

	passive immunity 被动免疫	_____	_____	_____
<i>/ˈpæsɪv ɪˈmjuːnɪti/</i>				
	natural immunity 天然免疫	_____	_____	_____
<i>/ˈnætʃərəl ɪˈmjuːnɪti/</i>				
	artificial immunity 人工免疫	_____	_____	_____
<i>/ˌɑːtɪˈfɪʃl ɪˈmjuːnɪti/</i>				
	vaccination 疫苗接种	_____	_____	_____
<i>/ˌvæksɪˈneɪʃn/</i>				
	herd immunity 群体免疫	_____	_____	_____
<i>/hɜːd ɪˈmjuːnɪti/</i>				

Mathematics

Topics 1–5 · Pure Mathematics 1, Probability & Statistics 1

	continuity correction 连续性校正	_____	_____	_____
<i>/kɒntɪˈnjuːɪti kəˈrekʃn/</i>				
	standardisation 标准化	_____	_____	_____
<i>/ˌstændədaɪˈzeɪʃn/</i>				
	coefficients 系数	_____	_____	_____
<i>/ˌkəʊˈfɪʃjənts/</i>				
	point of inflexion 拐点	_____	_____	_____
<i>/pɔɪnt ɒv ɪnˈflekʃn/</i>				
	improper integral 广义积分	_____	_____	_____
<i>/ɪmˈprɒpə ˈɪntɪgrəl/</i>				
	back-to-back 背靠背	_____	_____	_____
<i>/bæk tə bæk/</i>				
	measure of central tendency 集中趋势	_____	_____	_____
<i>/ˈmeʒə ɒv ˈsentərəl ˈtendənsi/</i>				
	Coding 编码	_____	_____	_____
<i>/ˈkəʊdɪŋ/</i>				

	assumed mean 假定平均数	_____	_____	_____
<i>/əˈsjuːmd mɪn/</i>				

Further Mathematics

Topic 4 · Further Probability & Statistics

	sign test 符号检验	_____	_____	_____
<i>/saɪn test/</i>				
	Wilcoxon signed-rank test 威尔科克森符号秩检验	_____	_____	_____
<i>/ˈwɪlkɒksn saɪnd ræŋk test/</i>				
	Wilcoxon rank-sum test 威尔科克森秩和检验	_____	_____	_____
<i>/ˈwɪlkɒksn ræŋk sʌm test/</i>				
	probability generating function 概率母函数	_____	_____	_____
<i>/ˌprəbəˈbɪləti ˈdʒenəreɪtɪŋ ˈfʌŋkʃn/</i>				

Computer Science

Topics 1–12 · Information representation, Communication, Processor Fundamentals, System Software, Security, privacy and data integrity, Ethics and Ownership, Databases, Algorithm Design and Problem-solving, Data Types and Structures, Programming, Software Development

	hardware interrupt 硬件中断	_____	_____	_____
<i>/ˈhɑːdweə ˈɪntərəpt/</i>				
	software interrupt 软件中断	_____	_____	_____
<i>/ˈsɒftweə ˈɪntərəpt/</i>				
	fragmented 碎片化	_____	_____	_____
<i>/ˈfræɡˈmentɪd/</i>				
	incremental backups 增量备份	_____	_____	_____
<i>/ˌɪŋkriˈmentl ˈbæksʌps/</i>				
	object code 目标代码	_____	_____	_____
<i>/ˈɒbdʒekt kəʊd/</i>				

 context-sensitive prompts 上下文相关提示 <i>/ˈkɒntekst ˈsensɪtɪv prɒmpts/</i>			
 dynamic syntax checks 动态语法检查 <i>/daɪˈnæmɪk ˈsɪntæks tʃeks/</i>			
 prettyprint 代码美化 <i>/ˈpreɪtɪprɪnt/</i>			
 single stepping 单步执行 <i>/ˈsɪŋɡl ˈsteɪpɪŋ/</i>			
 report window 报告窗口 <i>/rɪˈpɔːt ˈwɪndəʊ/</i>			
 parity block check 奇偶块校验 <i>/ˈpærɪti blɒk tʃek/</i>			
 code of conduct 行为准则 <i>/kəʊd ɒv ˈkɒndʌkt/</i>			
 partial dependency 部分依赖 <i>/ˈpɑːʃl dɪˈpendənsi/</i>			
 sub-problem 子问题 <i>/sʌb ˈprɒbləm/</i>			
 modules 模块 <i>/ˈmɒdjuːlz/</i>			
 identifier 标识符 <i>/aɪˈdentɪfaɪə/</i>			
 initialise 初始化 <i>/ɪˈnɪʃəlaɪz/</i>			
 separator 分隔符 <i>/ˈsepeɪreɪtə/</i>			
 IDE 集成开发环境 <i>/aɪ diː ˈiː/</i>			
 breakpoint 断点 <i>/ˈbreɪkpoɪnt/</i>			

 hierarchical decomposition 分解 <i>/haɪəˈrɑːkɪkl dɪˈkɒmpəˈzɪʃn/</i>			
 packet switching 分组交换 <i>/ˈpækɪt ˈswɪtʃɪŋ/</i>			
 nodes 节点 <i>/nəʊdz/</i>			
 modem 调制解调器 <i>/ˈmɒdəm/</i>			
 ALU 算术逻辑单元 <i>/eɪ el ˈjuː/</i>			
 time slice 时间片 <i>/taɪm sleɪs/</i>			
 interrupt handler 中断处理程序 <i>/ˈɪntərʌpt ˈhændlə/</i>			
 properties 属性 <i>/ˈprɒpətɪz/</i>			
Economics			
<i>Topic 6 · International economic issues</i>			
 trade in goods 货物贸易 <i>/treɪd ɪn ɡɒdz/</i>			
 trade in services 服务贸易 <i>/treɪd ɪn ˈsɜːvɪsɪz/</i>			
 primary income 初次收入 <i>/ˈpraɪməri ˈɪŋkəm/</i>			
 secondary income 二次收入 <i>/ˈsekəndəri ˈɪŋkəm/</i>			
 current account deficit 经常账户赤字 <i>/ˈkʌrənt əˈkaʊnt ˈdefɪsɪt/</i>			

 current account surplus 经常账户盈余 <i>/ˈkʌrənt əˈkaʊnt ˈsɜːpləs/</i>			
 floating exchange rate 浮动汇率 <i>/ˈflaʊtɪŋ eksˈtʃeɪndʒ reɪt/</i>			
 fixed exchange rate 固定 汇率 <i>/fɪkst eksˈtʃeɪndʒ reɪt/</i>			
 managed exchange rate 管理浮动汇率 <i>/ˈmænɪdʒd eksˈtʃeɪndʒ reɪt/</i>			
 appreciation 升值 <i>/əˌpriːʃiˈeɪʃn/</i>			
 depreciation 贬值 <i>/diˌpriːʃiˈeɪʃn/</i>			
 expenditure-reducing 支 出减少 <i>/ekˈspendɪtʃə rɪˈdjuːsɪŋ/</i>			
 expenditure-switching 支出转换 <i>/ekˈspendɪtʃə ˈswɪtʃɪŋ/</i>			
 competitiveness 竞争力 <i>/kəmˈpetɪtɪvnes/</i>			