

MORNING READING

Grade 10 Word Lists

Weekly vocabulary lists • all 18 weeks.

, 18 .

IGCSE subjects • English and .

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Morning Reading

Grade 10 · Week 1

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Science starts with **measurement**. In the laboratory , we do not guess. We use a **ruler** to measure length, a **measuring cylinder** to measure the volume of a liquid, and a balance to measure **mass**. Good scientists measure carefully, because every measurement has a small **uncertainty**.

Everything around you is made of tiny **particles**. In a **solid**, the particles are close together and only vibrate. In a **liquid**, they can move past each other. In a **gas**, they fly around quickly and are far apart. When you smell breakfast from the kitchen, gas particles have travelled to your nose!

Economists also study the world, but they study people. People have unlimited **wants**, but **resources** are **scarce**. This is the basic **economic problem**: we cannot have everything, so we must choose.

Talk about it :

1. What did you measure this week, and what did you use to measure it?
2. You have 20 yuan and one hour of free time. What do you choose to do, and what do you give up?

Physics

Topic 1 · Motion, forces and energy

 **measurement**

/ˈmeʒəmənt/

 **ruler**

/ˈruːlə/

 **measuring cylinder**

/ˈmeʒərɪŋ ˈsɪlɪndə/

 meniscus <i>/ˈmenɪskəs/</i>			
÷ measure many and divide <i>/ˈmeʒə ˈmeni ænd dɪˈvaɪd/</i>			
 pendulum <i>/ˈpendjʊləm/</i>			
 period <i>/ˈpɪəriəd/</i>			
 uncertainty <i>/ʌnˈsɜːtənti/</i>			
 magnitude <i>/ˈmæɡnɪtjuːd/</i>			
 mass <i>/mæs/</i>			
 energy <i>/ˈenədʒi/</i>			
 principle of conservation of energy <i>/ˈprɪnsɪpl ɒv ˌkɒnsəˈveɪʃn ɒv ˈenədʒi/</i>			
 principle of moments <i>/ˈprɪnsɪpl ɒv ˈməʊmənts/</i>			
 conservation of momentum <i>/ˌkɒnsəˈveɪʃn ɒv məʊˈmentəm/</i>			
 momentum <i>/məʊˈmentəm/</i>			
 temperature <i>/ˈtempərɪtʃə/</i>			
 force <i>/fɔːs/</i>			
 resultant force <i>/rɪˈzʌltənt fɔːs/</i>			
 resultant <i>/rɪˈzʌltənt/</i>			

↓ weight /weɪt/			
⌚ stopwatch /'stɒpwɒtʃ/			
🕒 digital timer /'dɪdʒɪtl 'taɪmə/			
⌚ reaction time /rɪ'ækʃn taɪm/			

Chemistry

Topic 1 · States of matter

⋯ particles /'pɑːtɪklz/			
⊠ atoms /'ætəməz/			
⬡ molecules /'mɒlɪkjʊːlz/			
± ions /'aɪənz/			
↻ kinetic particle theory /kɪ'netɪk 'pɑːtɪkl 'θɪəri/			
↕ kinetic energy /kɪ'netɪk 'enədʒi/			
⚡ energy /'enədʒi/			
🔥 thermal energy /'θɜːml 'enədʒi/			
📦 solid /'sɒlɪd/			
💧 liquid /'lɪkwɪd/			
☞ gas /gæs/			

 volume /'vɒljʊ:m/			
 compress /kəm'pres/			
 density /'densiti/			
 mass /mæs/			
 relative molecular mass /'relatɪv mə'lekjələ mæs/			
 separation /ˌsepə'reɪʃn/			
 arrangement /ə'reɪndʒmənt/			
 motion /'məʊʃn/			
 regular /'regjələ/			
 vibrate /vaɪ'breɪt/			
 forces of attraction /'fɔːsɪz ɒv ə'trækʃn/			

Biology

Topic 1 · Characteristics and classification of living organisms

 characteristics /ˌkærɪktə'rɪstɪks/			
 life processes /laɪf 'prəʊsesɪz/			
 organisms /'ɔːɡənɪzəmz/			
 movement /'muːvmənt/			

 respiration /ˌrespɪ'reɪʃn/			
 cells /selz/			
 nutrient molecules /ˈnjuːtriənt ˈmɒlɪkjʊːlz/			
 energy /ˈenədʒi/			
 metabolism /məˈtæbəlizəm/			
 sensitivity /ˌsensɪˈtɪvɪti/			
 environment /enˈvaɪrənmənt/			
 growth /grəʊθ/			
 dry mass /draɪ mæs/			
 reproduction /rɪprəˈdʌkʃn/			
 excretion /ekˈskreʃn/			
 waste products /weɪst ˈprɒdʌkts/			
 nutrition /njuːˈtrɪʃn/			
 classify /ˈklæsɪfaɪ/			
 species /ˈspiːsiːz/			
 fertile offspring /ˈfɜːtaɪl ˈɒfsprɪŋ/			
 scientific name /saɪənˈtɪfɪk neɪm/			



binomial system

/baɪ'nəʊmiəl 'sɪstəm/



genus

/'dʒenəs/



dichotomous key

/daɪ'kɒtəməs ki:/



**evolutionary
relationships**

/ɪvə'ljuːʃənəri rɪ'leɪʃənʃɪps/



ancestor

/'ænsɛstə/



base sequence

/beɪs 'siːkwəns/



genes

/dʒiːnz/



kingdoms

/'kɪŋdəmz/



animal

/'ænɪml/



cell wall

/sel wɔːl/



plant

/plænt/



photosynthesis

/ˌfəʊtəʊ'sɪnθəsis/



chloroplasts

/'klɒːrəʊplæsts/



fungus

/'fʌŋɡəs/



moulds

/məʊldz/



mushrooms

/'mʌʃruːmz/

Mathematics

Topic 1 · Number

natural number

/ˈnætʃərəl ˈnʌmbə/

± **integer**

/ˈɪntɪdʒə/

× **factor**

/ˈfæktə/

% **remainder**

/rɪˈmeɪndə/

* **multiple**

/ˈmʌltɪpl/

🔗 **common factor**

/ˈkɒmən ˈfæktə/

📦 **common multiple**

/ˈkɒmən ˈmʌltɪpl/

💎 **prime number**

/praɪm ˈnʌmbə/

◻ **square number**

/skweə ˈnʌmbə/

📦 **cube number**

/kjuːb ˈnʌmbə/

÷ **rational number**

/ˈræʃənəl ˈnʌmbə/

🕒 **fraction**

/ˈfrækʃn/

π **irrational number**

/ɪˈræʃənəl ˈnʌmbə/

↔ **reciprocal**

/rɪˈsɪprəkl/

📦 **product**

/ˈprɒdʌkt/

 **prime factor** _____
/praɪm 'fæktə/

 **highest common factor** _____
/'haɪst 'kɒmən 'fæktə/

Computer Science

Topic 1 · Data representation

 **digit** _____
/'dɪdʒɪt/

 **binary** _____
/'baɪnəri/

 **data** _____
/'deɪtə/

 **logic gate** _____
/'lɒdʒɪk geɪt/

 **processor** _____
/'prəʊsesə/

 **register** _____
/'redʒɪstə/

 **number system** _____
/'nʌmbə 'sɪstəm/

 **denary** _____
/'di:nəri/

 **hexadecimal** _____
/,heksə'desɪml/

 **base** _____
/beɪs/

 **place value** _____
/pleɪs 'vælju:/

 **bit** _____
/bɪt/

 **byte** _____
/baɪt/

	nibble /'nɪbl/			
	memory address /'meməri ə'dres/			
	overflow /əʊvə'fləʊ/			
	logical binary shift /'lɒdʒɪkl 'bʌnəri ʃɪft/			
	least significant bit /li:st sɪg'nɪfɪkənt bɪt/			
	two's complement /tu:z 'kɒmplɪmənt/			
	most significant bit /məʊst sɪg'nɪfɪkənt bɪt/			

Economics

Topic 1 · The basic economic problem

	resources /rɪ'zɔ:sɪz/			
	economic problem /ɪ:kə'nɒmɪk 'prɒbləm/			
	finite /'faɪnɪt/			
	wants /wɒnts/			
	scarce /skeəs/			
	scarcity /'skeəsɪti/			
	goods /ɡʊdz/			

 services /'sɜ:vɪsɪz/			
 consumers /kən'su:məz/			
 workers /'wɜ:kəz/			
 producers /prə'dju:səz/			
 firms /fɜ:mz/			
 governments /'gʌvənmənts/			
 economic goods /i:kə'nɒmɪk gʊdz/			
 opportunity cost /ɒpə'tju:nɪti kɒst/			

English

Topic 1 · Reading skills

 skim /skɪm/			
 gist /dʒɪst/			
 paragraph /'pærəgræf/			
 scan /skæn/			
 predict /prɪ'dɪkt/			
 phrase /freɪz/			
 multiple matching /'mʌltɪpl 'mætʃɪŋ/			

Morning Reading

Grade 10 · Week 2

Read each word aloud, then copy the English word three times.

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Reading

Read the passage aloud twice.

。

Li Wei cycles to school every morning. When the road is empty, his **speed** is high. When he sees the school gate, he slows down. This is called **deceleration**. At the gate he stops and waits for his friend, so he is **at rest**. If you draw his journey on a **distance–time graph**, the **gradient** of the line shows his speed.

Before school, his mother boils water for tea. **Boiling** turns the liquid into gas. Some water is also **evaporating** slowly from the wet cups by the window. On the cold glass, the steam is **condensing** back into water drops.

His aunt is an **entrepreneur**. She opened a small noodle shop this year. She needed **land** for the shop, **labour** to cook and serve, and **capital** such as pots and tables. Her reward is **profit**. Every choice has an **opportunity cost**: the money she spent on tables cannot buy a new sign.

Talk about it :

1. Describe your journey to school using the words speed, acceleration, and at rest.
2. If you started a small shop, what land, labour, and capital would you need?

Physics

Topics 1–3 · Motion, forces and energy, Thermal physics, Waves

⊙ **scalar quantity**

/ˈskeɪlə ˈkwɒntəti/

→ **vector quantity**

/ˈvektə ˈkwɒntəti/

⚡ **electric field strength**

/ɪˈlektrɪk fiːld streŋθ/

	uniform /'ju:nifo:m/			
	circular motion /'sɜ:kjələ 'məʊn/			
	radius /'reɪdiəs/			
	stability /stə'bɪləti/			
	renewability /rɪnju:ə'bɪləti/			
	availability /ə'veɪlə'bɪləti/			
	reliability /rɪ,laɪə'bɪləti/			
	scale /skeɪl/			
	environmental impact /en,vairən'mentl 'ɪmpækt/			
	lattice /'lætɪs/			
	thermometer /θɜ:'mɒmɪtə/			
	insulating material /'ɪnsju:leɪtɪŋ mə'tɪəriəl/			
	potassium permanganate /pə'tæsiəm pə'mæŋɡənɛɪt/			
	Leslie cube /'lesli kju:b/			
	atmosphere /æt'məsfiə/			
	radiator /'reɪdiəɪtə/			

 vacuum flask /ˈvækju:m flæsk/			
 peak /pi:k/			
 ray box /reɪ bɒks/			
 principal axis /ˈprɪnsɪpl ˈæksɪs/			

Chemistry

Topics 1–2 · States of matter, Atoms, elements and compounds

 melting /ˈmeltɪŋ/			
 melting point /ˈmeltɪŋ poɪnt/			
 boiling point /ˈboɪlɪŋ poɪnt/			
 boiling /ˈboɪlɪŋ/			
 freezing /ˈfriːzɪŋ/			
 evaporating /ɪˈvæpəreɪtɪŋ/			
 condensing /kənˈdensɪŋ/			
 sublimation /ˌsʌblɪˈmeɪʃn/			
 heating curve /ˈhiːtɪŋ kɜːv/			
 cooling curve /ˈkuːlɪŋ kɜːv/			
 collide /kəˈlaɪd/			

 diffusion /dɪ'fjuːʒn/			
 concentration /ˌkɒnsən'treɪʃn/			
 rate /reɪt/			
 pressure /'preʃə/			
 ammonia /æ'məʊniə/			
 hydrogen chloride /'haɪdrədʒn 'klɔːraɪd/			
 ammonium chloride /æ'məʊniəm 'klɔːraɪd/			
 compound /'kɒmpaʊnd/			
 ionic compound /aɪ'ɒnɪk 'kɒmpaʊnd/			
 ionic bond /aɪ'ɒnɪk bɒnd/			
 covalent bond /'kəʊvələnt bɒnd/			

Biology

Topic 1 · Characteristics and classification of living organisms

 yeast /jiːst/			
 prokaryote /'prɒkəriəʊt/			
 bacteria /bæk'tɪəriə/			

 single-celled /'sɪŋɡl səld/			
 nucleus /'njuːklɪəs/			
 protocyst /'prəʊtəʊkɪst/			
 algae /'ælgiː/			
 vertebrates /'vɜːtɪbreɪts/			
 backbone /'bækbəʊn/			
 mammals /'mæmlz/			
 fur /fɜː/			
 birds /bɜːdz/			
 feathers /'feðəz/			
 beak /biːk/			
 reptiles /'reptailz/			
 scales /skeɪlz/			
 amphibians /æm'fɪbiənz/			
 fish /fɪʃ/			
 fins /fɪnz/			
 gills /gɪlz/			

 **arthropods**
/'ɑ:θrəpɒdz/

 **exoskeleton**
/'eksəʊskelɪtn/

 **joints**
/dʒɔɪnts/

 **insects**
/'ɪnsektz/

 **antennae**
/æn'teni:/

 **arachnids**
/ə'ræknɪdz/

 **crustaceans**
/kra'steɪʃnz/

 **myriapods**
/'maɪrɪəpɒdz/

 **segments**
/'segmənts/

 **ferns**
/fɜ:nz/

 **spores**
/'spɔ:z/

 **flowering plants**
/'flaʊərɪŋ plænts/

 **seeds**
/'si:dz/

 **cotyledons**
/ˌkɒtɪ'li:dnz/

 **monocotyledons**
/ˌmɒnəʊˌkɒtɪ'li:dnz/

 **leaf veins**
/li:f veɪnz/

 **dicotyledons**
/ˌdɪkɒtɪ'li:dnz/

Mathematics

Topic 1 · Number

↓ **lowest common multiple**

/ˈləʊɪst ˈkɒmən ˈmʌltɪpl/

{ } **set**

/set/

• **element**

/ˈelɪmənt/

□ **universal set**

/juːnɪˈvɜːsl set/

⊗ **complement**

/ˈkɒmplɪmənt/

⊘ **empty set**

/ˈempti set/

⊆ **subset**

/ˈsʌbset/

∪ **union**

/ˈjuːniən/

∩ **intersection**

/ˌɪntəˈsekʃn/

⊙ **Venn diagram**

/ven ˈdaɪəgræm/

⊂ **power**

/ˈpaʊə/

index

/ˈɪndeks/

√ **square root**

/skweə ruːt/

∛ **cube root**

/kjuːb ruːt/

×₂ **base**

/beɪs/

→ **standard form**

/ˈstændəd fɔ:m/

√ **surd**

/sɜ:d/

Computer Science

Topics 1–2 · Data representation, Data transmission

T **character set**

/ˈkærɪktə set/

😊 **emoji**

/iˈməʊdʒi/

💾 **storage**

/ˈstɔːrɪdʒ/

🎵 **sound wave**

/saʊnd weɪv/

📶 **sampling**

/ˈsæmplɪŋ/

🕒 **sample rate**

/ˈsæmpl reɪt/

📏 **sample resolution**

/ˈsæmpl ˌrezəˈluːʃn/

↕ **amplitude**

/ˈæmplitjuːd/

□ **pixel**

/ˈpɪksl/

📐 **resolution**

/ˌrezəˈluːʃn/

👁️ **colour depth**

/ˈkʌlə depθ/

✖ **compression**

/kəmˈpreʃn/

 bandwidth /'bændwɪðθ/			
 transmission /træn'smɪʃn/			
 lossless /'lɒsləs/			
 run-length encoding /rʌn leŋθ en'kəʊdɪŋ/			
 lossy /'lɒsi/			
 data transmission /'deɪtə træn'smɪʃn/			
 packets /'pækɪts/			
 packet header /'pækɪt 'hedə/			

Economics

Topic 1 · The basic economic problem

 free goods /'fri: ɡʊdz/			
 factors of production /'fæktəz ɒv prə'dʌkʃn/			
 land /lənd/			
 labour /'leɪbə/			
 capital /'kæpɪtl/			
 enterprise /'entəpraɪz/			

 entrepreneur /ˌɒntrɪprəʊˈnjuː/			
 reward /rɪˈwɔːd/			
 rent /rent/			
 wages /ˈweɪdʒɪz/			
% interest /ˈɪntrest/			
 profit /ˈprɒfɪt/			
 mobility /məʊˈbɪlɪti/			
 alternative /ɔːlˈtɜːnətɪv/			
 production possibility curve /prəˈdʌkʃn ˌpɒsəˈbɪlɪti kɜːv/			

English

Topic 1 · Reading skills

 paraphrase /ˈpærəfreɪz/			
 signal words /ˈsɪɡnəl wɜːdz/			
+ addition /əˈdɪʃn/			
 contrast /ˈkɒntræst/			
→ cause and effect /kɔːz ænd ɪˈfekt/			
 note-making /nəʊt ˈmeɪkɪŋ/			

 summary
/ˈsʌməri/

Morning Reading

Grade 10 · Week 3

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

When you send a photo to a friend, your phone does something clever. It cuts the photo into small **packets**. Each packet gets a **packet header** with the **address** of your friend's phone. **Routers** on the internet read the address and push each packet forward. This is called **packet switching**. At the other end, the packets join together again, and your friend sees the photo.

In science class this week, we learned about balance. A seesaw turns around a **pivot**. The turning effect of a force is called a **moment**. When the moments on both sides are equal, the seesaw is in **equilibrium**. Every object also has a **centre of gravity**, the point where its weight seems to act.

In economics, a country must choose what to make. A **production possibility curve** shows the choices. Making more phones may mean making less food. That is a **trade-off**.

Talk about it :

1. Explain to a younger student how a photo travels across the internet.
2. Give one trade-off you made this week. What did you give up?

Physics

Topics 3–5 · Waves, Electricity and magnetism, Nuclear physics

 **enlarged**

/enˈlɑːdʒd/

 **diminished**

/dɪˈmɪnɪʃt/

 **upright**

/ˈʌpraɪt/

 **inverted**

/ɪnˈvɜːtɪd/

 **short-sightedness**

/ʃɔːt ˈsaɪtɪdnəs/

 **retina**

/ˈretɪnə/

 **long-sightedness**

/lɒŋ ˈsaɪtɪdnəs/

 **artificial satellites**

/ˌɑːtɪˈfɪʃl ˈsætələɪts/

 **low orbit**

/ləʊ ˈɔːbɪt/

 **geostationary orbit**

/ˌdʒiːəʊˈsteɪʃənəri ˈɔːbɪt/

 **analogue**

/ˈænəlɒɡ/

 **digital**

/ˈdɪdʒɪtl/

 **loudness**

/ˈlaʊdnəs/

 **pitch**

/pɪtʃ/

 **Ultrasound**

/ˌʊltrəˈsaʊnd/

↕ **repulsion**

/rɪ'pʌlʃn/

🌀 **attraction**

/ə'trækʃn/

≡ **ranges**

/'reɪndʒɪz/

👉 **Fleming's right-hand rule**

/'flemɪŋz raɪt hænd ru:l/

☞ **Fleming's left-hand rule**

/'flemɪŋz left hænd ru:l/

↪ **deflected**

/dɪ'flektɪd/

👂 **absorbed**

/əb'sɔ:bd/

📌 **medical tracer**

/'medɪkl 'treɪsə/

Chemistry

Topics 2–7 · Atoms, elements and compounds, Acids, bases and salts

🏠 **giant covalent structure**

/'dʒaɪənt 'kəʊvələnt 'strʌktʃə/

🌀 **mixture**

/'mɪkstʃə/

👁 **electrons**

/'ɪlektrɒnz/

⊗ **element**

/'elɪmənt/

⊕ **proton**

/'prəʊtɒn/

🎯 **nucleus**

/'nju:klɪəs/

 charge <i>/tʃɑːdʒ/</i>			
# proton number <i>/'prəʊtɒn 'nʌmbə/</i>			
Σ nucleon number <i>/'njuːklɪən 'nʌmbə/</i>			
 delocalised electrons <i>/dɪ'lɒkəlaɪzd ɪ'lektɹɒnz/</i>			
 shells <i>/ʃelz/</i>			
 neutrons <i>/'njuːtrɒnz/</i>			
ᶿ atomic number <i>/ə'tɒmɪk 'nʌmbə/</i>			
 mass number <i>/mæs 'nʌmbə/</i>			
 relative atomic mass <i>/'relatɪv ə'tɒmɪk mæs/</i>			
 electronic configuration <i>/ɪlek'trɒnɪk kən'fɪɡjə'reɪʃn/</i>			
 Periodic Table <i>/'pɪərɪ'ɒdɪk 'teɪbl/</i>			
 Period <i>/'pɪəriəd/</i>			
 Group <i>/gruːp/</i>			

Biology

Topics 1–2 · Characteristics and classification of living organisms, Organisation of the organism

 **viruses**

/ˈvaɪrəsɪz/

 **protein coat**

/ˈprəʊtiːn kəʊt/

 **genetic material**

/dʒiˈnetɪk məˈtɪəriəl/

 **host**

/həʊst/

 **digestion**

/daɪˈdʒestʃn/

 **division**

/dɪˈvɪʒn/

 **cell membrane**

/sel ˈmembreɪn/

 **cytoplasm**

/ˈsaɪtəplæzəm/

 **ribosomes**

/ˈrɪbə səʊmz/

 **mitochondria**

/ˌmaɪtəˈkɒndrɪə/

 **vacuole**

/ˈvækjuːəl/

 **proteins**

/ˈprəʊtiːnz/

 **cellulose**

/ˈseljuːləʊs/

 **chlorophyll**

/ˌklɒrəʊˈfɪl/

 **cell sap**

/sel sæp/

 **plasmids**

/ˈplæzmidz/

 **specialised cells**

/ˈspeʃəlaɪzd selz/

 **ciliated cells**

/ˈsɪliətɪd selz/

 **mucus**

/ˈmjuːkəs/

 **trachea**

/trəˈkiə/

 **bronchi**

/ˈbrɒŋkai/

 **root hair cells**

/ruːt heə selz/

 **absorption**

/əbˈsɔːpʃn/

 **palisade mesophyll cells**

/ˈpælɪseɪd ˈmesəfɪl selz/

 **neurones**

/ˈnjuːrəʊnz/

 **electrical impulses**

/ɪˈlektrɪkl ˈɪmpʌlsɪz/

 **red blood cells**

/red bləd selz/

 **oxygen**

/ˈɒksɪdʒn/

 **sperm**

/spɜːm/

 **egg cells**

/eg selz/

 **gametes**

/ˈgæmiːts/

 **tissue**
/'tʃuː/

 **muscle**
/'mʌsl/

 **organ**
/'ɔːɡən/

 **organ system**
/'ɔːɡən 'sɪstəm/

Mathematics

Topic 1 · Number

 **rationalise the denominator**
/'ræʃənəlaɪz ðə di'nɒmɪneɪtə/

 **denominator**
/di'nɒmɪneɪtə/

 **numerator**
/'njuːməreɪtə/

 **proper fraction**
/'prɒpə 'frækʃn/

 **improper fraction**
/ɪm'prɒpə 'frækʃn/

 **mixed number**
/mɪkst 'nʌmbə/

 **decimal**
/'desɪml/

 **percentage**
/pə'sentɪdʒ/

 **simplest form**
/'sɪmpəlɪst fɔːm/

 **recurring decimal**
/rɪ'kɜːrɪŋ 'desɪml/

order of operations

/ˈɔːdə ɒv ˌɒpəˈreɪʃnz/

magnitude

/ˈmæɡnɪtjuːd/

multiplier

/ˌmʌltɪˈplaɪə/

interest

/ˈɪntrest/

principal

/ˈprɪnsɪpl/

simple interest

/ˈsɪmpl ˈɪntrest/

compound interest

/ˈkɒmpaʊnd ˈɪntrest/

Computer Science

Topic 2 · Data transmission

payload

/ˈpeɪləʊd/

trailer

/ˈtreɪlə/

address

/əˈdres/

packet switching

/ˈpækɪt ˈswɪtʃɪŋ/

routers

/ˈruːtəz/

serial

/ˈsɪəriəl/

parallel

/ˈpærəlel/

→ simplex /'simpleks/			
↔ half-duplex /hɑ:f 'dju:pleks/			
↔ full-duplex /fʊl 'dju:pleks/			
🔌 universal serial bus /ju:ni'vɜ:sl 'sɪəriəl bʌs/			
📏 interface /'intəfeɪs/			
⚡ interference /ˌɪntə'fɪərəns/			
⚖ parity check /'pærɪti tʃek/			
🕒 parity bit /'pærɪti bɪt/			
Σ checksum /'tʃeksəm/			
↩ echo check /'ekəʊ tʃek/			
↺ automatic repeat request /ˌɔ:tə'mætɪk rɪ'pi:t rɪ'kwɛst/			
✓ acknowledgements /ək'nɒlɪdʒmənts/			
🕒 timeout /'taɪmaʊt/			

Economics

Topics 1–2 · The basic economic problem, The allocation of resources

 **unemployment**

/ʌnem'plɔimənt/

 **trade-off**

/treɪd ɒf/

 **economic growth**

/i:kə'nɒmɪk grəʊθ/

 **economic decline**

/i:kə'nɒmɪk dɪ'klaɪn/

 **non-renewable resources**

/nɒn rɪ'nju:əbl rɪ'zɔ:sɪz/

 **microeconomics**

/,maɪkrəʊ,i:kə'nɒmɪks/

 **macroeconomics**

/,mækrə,ri:kə'nɒmɪks/

 **market**

/'mɑ:kit/

 **price mechanism**

/praɪs 'mekənɪzəm/

 **allocate**

/'æləkeɪt/

 **signalling**

/'sɪgnəlɪŋ/

 **incentive**

/ɪn'sentɪv/

 **rationing**

/'ræʃənɪŋ/

 **demand**
/dɪ'mænd/

English

Topic 1 · Reading skills

 **repetition**
/ˌrepə'tɪʃn/

 **inference**
/'ɪnfərəns/

 **implies**
/ɪm'plaɪz/

 **attitude**
/'ætɪtju:d/

 **word choice**
/wɜ:d tʃɔɪs/

 **multiple-choice**
/'mʌltɪpl tʃɔɪs/

 **context**
/'kɒntekst/

Morning Reading

Grade 10 · Week 4

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Lifting your school bag is **work done**. Energy is measured in **joules**, and **power**, measured in **watts**, tells us how fast energy is used. A bright old lamp feels hot because much of its energy is **wasted** as heat. A good LED lamp has high **efficiency**: most of the electrical energy becomes light. A **Sankey diagram** shows with wide and narrow arrows where the energy goes.

Your messages also need protection. Before a message leaves your phone, an app turns the readable **plaintext** into secret **ciphertext**. This is **encryption**. Only someone with the right **key** can read it, even if the message is **intercepted** on the way.

Shops watch our choices carefully. The **law of demand** says that when the price of a good rises, the **quantity demanded** usually falls. If milk tea gets expensive, many students switch to **substitutes** such as juice.

Talk about it :

1. Name one thing at home that wastes energy. How could you improve its efficiency?
2. The price of your favourite snack doubles. What do you buy instead, and why?

Physics

Topic 1 · Motion, forces and energy

↻ **velocity**

/və'ləsɪti/

↓ **terminal velocity**

/'tɜːmɪnəl və'ləsɪti/

↻ **acceleration**

/ək'selə'reɪʃn/

↓ acceleration of free fall			
/ək,selə'reɪʃn ɒv fri: fɔ:l/			
↗ speed			
/spi:d/			
↗ speed–time graph			
/spi:d taɪm græf/			
↗ load–extension graph			
/ləʊd ek'stenʃn græf/			
↗ distance–time graph			
/'dɪstəns taɪm græf/			
↕ extension			
/ek'stenʃn/			
↘ deceleration			
/dɪ,selə'reɪʃn/			
⏸ at rest			
/æt rest/			
↗ gradient			
/'greɪdɪənt/			
Σ area under the line			
/'eəriə 'ʌndə ðə laɪn/			
⇌ air resistance			
/əə rɪ'zɪstəns/			
⊗ matter			
/'mætə/			
⊕ gravitational field strength			
/'grævɪ'teɪʃənl fi:ld streŋθ/			
Δ gravitational potential			
/'grævɪ'teɪʃənl pə'tenʃl/			
⚖ balance			
/'bæləns/			

 regular solid /'regjʊlə 'sɒlɪd/			
 irregular solid /'tʁegjʊlə 'sɒlɪd/			
 displacement method /dɪ'spleɪsmənt 'meθəd/			
 floats /fləʊts/			
 shape /ʃeɪp/			

Chemistry

Topics 2–4 · Atoms, elements and compounds, Electrochemistry

 noble gases /'nəʊbl 'gæsiːz/			
 isotopes /'aɪsəʊtəʊps/			
 abundance /ə'bʌndəns/			
 cation /'kætaɪən/			
 anion /'ænaɪən/			
 electrostatic attraction /ɪˌlektərəʊ'stætɪk ə'trækʃn/			
 metal /'metl/			
 non-metal /nɒn 'metl/			
 lattice /'lætɪs/			

	alternating			
	/ˈɔːltənɛɪtɪŋ/			
	electrical conductivity			
	/ɪˈlektɹɪkl kɒndəktɪvɪti/			
	electric current			
	/ɪˈlektɹɪk ˈkʌərənt/			
	molten			
	/ˈməʊltən/			
	aqueous			
	/ˈeɪkwɪəs/			
	intermolecular forces			
	/ˌɪntəməˈlekjələ ˈfɔːsɪz/			
	diamond			
	/ˈdaɪəmənd/			
	cutting tools			
	/ˈkʌtɪŋ tuːlz/			
	graphite			
	/ˈgræfaɪt/			
	layers			
	/ˈleɪəz/			
	lubricant			
	/ˈluːbrɪkənt/			
	electrode			
	/ɪˈlektɹəʊd/			
	silicon(IV) oxide			
	/ˈsɪlɪkən ˈɒksaɪd/			

Biology

Topics 2–4 · Organisation of the organism, Movement into and out of cells, Biological molecules

	digestive system			
	/daɪˈdʒestɪv ˈsɪstəm/			

 microscope /'maɪkrəskəʊp/			
 magnification /'mæɡnɪfɪ'keɪʃn/			
 specimen /'spesɪmən/			
 micrometres /'maɪkrəʊmɪ:təz/			
 diffusion /dɪ'fjuːʒn/			
 net movement /net 'muːvmənt/			
 particles /'pɑːtɪklz/			
 concentration /ˌkɒnsən'treɪʃn/			
 concentration gradient /ˌkɒnsən'treɪʃn 'ɡreɪdɪənt/			
 random movement /'rændəm 'muːvmənt/			
 kinetic energy /kɪ'netɪk 'enədʒi/			
 ions /'aɪənz/			
 gases /'ɡæsɪz/			
 solutes /'sɒljuts/			
 carbon dioxide /'kɑːbən daɪ'ɒksaɪd/			
 surface area /'sɜːfɪs 'eəriə/			

 temperature /'tempɪtʃə/			
 solvent /'sɒlvənt/			
 dissolve /dɪ'sɒlv/			
 solution /sə'lu:ʃn/			
 transport /'trænsɒ:t/			
 osmosis /ɒz'məʊsɪs/			
 partially permeable membrane /'pɑ:ʃəli 'pɜ:məbl 'membreɪn/			
 water potential /'wɔ:tə pə'tenʃl/			
 turgid /'tɜ:dʒɪd/			
 turgor pressure /'tɜ:gə 'preʃə/			
 flaccid /'flæsɪd/			
 plasmolysis /plæz'mɒləsɪs/			
 dialysis tubing /daɪ'æləsɪs 'tju:bɪŋ/			
 active transport /'æktɪv 'trænsɒ:t/			
 root hairs /ru:t heəz/			
 protein carriers /'prəʊtɪ:n 'kæriəz/			

 **molecule**

/ˈmɒlɪkjʊːl/

 **elements**

/ˈelɪmənts/

 **carbohydrates**

/ˌkɑːbəʊˈhaɪdreɪts/

Mathematics

Topic 1 · Number

 **reverse percentage**

/rɪˈvɜːs pəˈsentɪdʒ/

 **exponential growth**

/ˌekspəˈnenʃl grəʊθ/

 **exponential decay**

/ˌekspəˈnenʃl dɪˈkeɪ/

 **depreciation**

/dɪˌpriːʃiˈeɪʃn/

 **ratio**

/ˈreɪʃiəʊ/

 **proportion**

/prəˈpɔːʃn/

 **scale**

/skeɪl/

 **rate**

/reɪt/

 **average speed**

/ˈævərɪdʒ spiːd/

 **density**

/ˈdensɪti/

 **mass**

/mæs/

 volume /'vɒljʊ:m/			
 population density /ˌpɒpjʊ'leɪʃn 'densɪti/			
 pressure /'preʃə/			
 decimal place /'desɪml pleɪs/			
 significant figure /sɪg'nɪfɪkənt 'fɪɡə/			
 estimate /'estɪmət/			

Computer Science

Topics 2–3 · Data transmission, Hardware

 check digit /tʃek 'dɪdʒɪt/			
 transposition error /trænspe'zɪʃn 'erə/			
 barcodes /'bɑ:kəʊdɪz/			
 encryption /en'krɪpʃn/			
 intercepted /ˌɪntə'septɪd/			
 plaintext /'pleɪntekst/			
 ciphertext /'saɪfətɛkst/			
 symmetric encryption /sɪ'metrɪk en'krɪpʃn/			

 key /ki:/			
 asymmetric encryption /ˌeɪsɪ'metrɪk en'krɪptʃn/			
 public key /'pʌblɪk ki:/			
 private key /'praɪvət ki:/			
 central processing unit /'sentrəl 'prəʊsesɪŋ 'ju:nɪt/			
 instructions /ɪn'strʌkʃnz/			
 arithmetic logic unit /ə'rɪθmətɪk 'lɒdʒɪk 'ju:nɪt/			
 control unit /kən'trəʊl 'ju:nɪt/			
 buses /'bʌsɪz/			
 address bus /ə'dres bʌs/			
 data bus /'deɪtə bʌs/			

Economics

Topic 2 · The allocation of resources

 **law of demand**

/lɔ: vɒ di'mænd/

 **inverse relationship**

/ɪn'vɜ:s rɪ'leɪʃənʃɪp/

 **ceteris paribus**

/'setəris 'pærɪbəs/

 **quantity demanded**

/'kwɒntəti di'mændɪd/

 **demand curve**

/di'mænd kɜ:v/

 **shift**

/ʃɪft/

 **income**

/'ɪŋkʌm/

 **tastes**

/teɪsts/

 **substitutes**

/'sʌbstɪtju:ts/

 **complements**

/'kɒmplɪmənts/

 **population**

/ˌpɒpjʊ'leɪʃn/

 **advertising**

/'ædvɜ:təɪzɪŋ/

 **supply**

/sə'plaɪ/

 **law of supply**

/lɔ: vɒ sə'plaɪ/

English

Topic 2 · Writing: purpose, audience and accuracy

 **purpose**

/ˈpʊːpəs/

 **inform**

/ɪnˈfɔːm/

 **argue**

/ˈɑːɡjuː/

 **discuss**

/dɪˈskʌs/

 **audience**

/ˈɔːdiəns/

 **register**

/ˈredʒɪstə/

 **formal**

/ˈfɔːml/

Morning Reading

Grade 10 · Week 5

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

On a cold morning, a metal spoon feels colder than a wooden one, but they have the same temperature. Metal is a good **thermal conductor**: it carries heat away from your warm hand quickly. Wood is a **thermal insulator**. Your coat does not make heat; it traps air, which is a poor conductor, so your body's heat stays close to you. Water needs a lot of energy to warm up because it has a high **specific heat capacity**.

Inside every computer, the processor repeats the **fetch-execute cycle** many millions of times each second. Instructions wait in **memory**, small fast **registers** hold the data being used right now, and a **cache** keeps popular data near the processor, like a pencil case on your desk.

In the market, sellers respond to prices. The **law of supply** says a higher price usually raises the **quantity supplied**. When demand and supply meet, the market reaches **equilibrium**. If the price is set too low, there is a **shortage**.

Talk about it :

1. Why does a metal chair feel colder than a plastic one in the same room?
2. Concert tickets sell out in one minute. Is the price too high or too low? Explain.

Physics

Topic 1 · Motion, forces and energy

 **limit of proportionality**

/ˈlɪmɪt ɒv prəˌpɔːʃəˈnælɪti/

 **spring constant**

/sprɪŋ ˈkɒnstənt/

 **friction**

/ˈfrɪkʃn/

 **moment**

/ˈməʊmənt/

 **pivot**

/ˈpɪvət/

 **equilibrium**

/ˌiːkwɪˈlɪbrɪəm/

 **centre of gravity**

/ˈsentə ɒv ˈɡrævɪti/

 **lamina**

/ˈlæmɪnə/

 **stable**

/ˈsteɪbl/

 **impulse**

/ˈɪmpʌls/

 **stored**

/stoːd/

 **transferred**

/trænsˈfɜːd/

 **kinetic**

/kɪˈnetɪk/

 **chemical**

/ˈkemɪkl/

 **elastic (strain)**

/ɪˈlæstɪk/

 nuclear /'nju:klɪə/			
 electrostatic /ɪˌlektɹəʊ'stætɪk/			
 internal (thermal) /ɪn'tɜ:nl/			
 Sankey diagram /'sæŋki 'daɪəgræm/			
 wasted /'weɪstɪd/			
 work done /wɜ:k dʌn/			
 joule /dʒu:l/			
 power /'paʊə/			

Chemistry

Topics 2–3 · Atoms, elements and compounds, Stoichiometry

 metallic bonding /mə'tæɪk 'bɒndɪŋ/			
 malleability /ˌmælə'bɪlɪti/			
 ductility /dʌk'tɪlɪti/			
 stoichiometry /ˌstɔɪkɪ'ɒmətri/			
 formula /'fɔ:mjələ/			
 molecular formula /mə'lekjələ 'fɔ:mjələ/			
 empirical formula /em'pɪrɪkl 'fɔ:mjələ/			

 relative formula mass			
<i>/ˈrelatɪv ˈfɔːmjʊlə məs/</i>			
 molar mass			
<i>/ˈməʊlə məs/</i>			
 molar gas volume			
<i>/ˈməʊlə ɡæs ˈvɒljʊːm/</i>			
% percentage composition by mass			
<i>/pəˈsentɪdʒ ˌkɒmpəˈzɪʃn baɪ məs/</i>			
 percentage purity			
<i>/pəˈsentɪdʒ ˈpjʊərɪti/</i>			
% percentage yield			
<i>/pəˈsentɪdʒ ˈjiːld/</i>			
÷ ratio			
<i>/ˈreɪʃiəʊ/</i>			
 spectator ions			
<i>/spekˈteɪtə ˈaɪənz/</i>			
= ionic equation			
<i>/aɪˈɒnɪk ɪˈkweɪʃn/</i>			
T word equation			
<i>/wɜːd ɪˈkweɪʃn/</i>			
Σ symbol equation			
<i>/ˈsɪmbl ɪˈkweɪʃn/</i>			
→ reactants			
<i>/rɪˈæktənts/</i>			
 products			
<i>/ˈprɒdʌkts/</i>			
 balanced			
<i>/ˈbælənst/</i>			

Biology

Topics 4–6 · Biological molecules, Enzymes, Plant nutrition

 **fats**
/fæts/

 **carbon**
/'kɑ:bən/

 **hydrogen**
/'haɪdrədʒn/

 **nitrogen**
/'naɪtrədʒn/

 **starch**
/stɑ:tʃ/

 **glycogen**
/'glʌɪkədʒn/

 **glucose**
/'glu:kəʊs/

 **amino acids**
/ə'mi:nəʊ 'æsɪdz/

 **fatty acids**
/'fæti 'æsɪdz/

 **glycerol**
/'glɪsərəl/

 **iodine solution**
/'aɪədi:n sə'lu:ʃn/

 **reducing sugars**
/'rɪ'dju:sɪŋ 'ʃʊgəz/

 **Benedict's solution**

/'benɪdɪkts sə'lu:ʃn/

 **biuret**
/'bɪju:rət/

 **ethanol**
/'eθənl/

 emulsion /ɪ'mʌljən/			
 vitamin /'vɪtəmin/			
 strands /strændz/			
 double helix /'dʌbl 'hi:lɪks/			
 bases /'beɪsɪz/			
 bonds /bɒndz/			
 catalyst /'kætəlist/			
 rate /reɪt/			
 chemical reaction /'kemɪkl rɪ'ækʃn/			
 enzymes /'enzaimz/			
 active site /'æktɪv saɪt/			
 substrate /'sʌbstreɪt/			
 complementary /,kɒmplɪ'mentəri/			
 enzyme-substrate complex /'enzaim 'sʌbstreɪt 'kɒmpleks/			
 products /'prɒdʌkts/			
 specific /spə'sɪfɪk/			

 **collisions**
/kə'liʒnz/

 **optimum temperature**
/'ɒptɪməŋ 'temprɪtʃə/

 **denatured**
/'denətʃəd/

 **raw materials**
/rɔː mə'tɪəriəlz/

 **pigment**
/'pɪgmənt/

Mathematics

Topics 1–2 · Number, Algebra and graphs

 **lower bound**
/'ləʊə baʊnd/

 **upper bound**
/'ʌpə baʊnd/

 **area**
/'eəriə/

 **time zone**
/taɪm zəʊn/

 **exchange rate**
/eks'tʃeɪndʒ reɪt/

 **algebra**
/'ældʒɪbrə/

 **variable**
/'veəriəbl/

 **substitute**
/'sʌbstɪtju:t/

 **term**
/tɜːm/

 **expression**
/ek'spreʃn/

 **like terms**
/laɪk tɜːmz/

× **coefficient**
/ˌkəʊɪˈfɪjənt/

[] **expand**
/ekˈspænd/

[] **brackets**
/ˈbrækɪts/

↗ ↘ **factorise**
/ˈfæktəraɪz/

□ **difference of two squares**
/ˈdɪfrəns ɒv tuː skweəz/

□ **perfect square**
/ˈpɜːfekt skweə/

Computer Science

Topic 3 · Hardware

🔌 **control bus**
/kənˈtrəʊl bʌs/

⏮ **program counter**
/ˈprəʊgræm ˈkaʊntə/

📍 **memory address register**
/ˈmeməri əˈdres ˈredʒɪstə/

📦 **memory data register**
/ˈmeməri ˈdeɪtə ˈredʒɪstə/

⏮ **current instruction register**
/ˈkʌrənt ɪnˈstrʌkʃn ˈredʒɪstə/

+ **accumulator**
/əˈkjuːmjʊleɪtə/

 **fetch-execute cycle**

/fetʃ'eksɪkjʊt 'saɪkl/

 **memory**

/'meməri/

 **Cache**

/kæʃ/

 **cores**

/kɔːz/

 **clock speed**

/klɒk spiːd/

 **embedded system**

/em'bedɪd 'sɪstəm/

 **barcode scanner**

/'bɑːkəʊd 'skænə/

 **QR code scanner**

/ˌkjuː 'ɑː kəʊd 'skænə/

 **optical mouse**

/'ɒptɪkl maʊs/

 **sensors**

/'sensəz/

 **touch screen**

/tʌtʃ skriːn/

 **resistive**

/rɪ'zɪstɪv/

 **capacitive**

/kə'pæsɪtɪv/

 **infrared**

/ˌɪnfərə'red/

Economics

Topic 2 · The allocation of resources

↗ **direct relationship**

/daɪ'rekt rɪ'leɪʃənʃɪp/

quantity supplied

/'kwɒntəti sə'plaɪd/

↗ **supply curve**

/sə'plaɪ kɜ:v/

💰 **costs of production**

/kɒsts ɒv prə'dʌkʃn/

🔧 **technology**

/tek'nɒlədʒi/

🏛️ **tax**

/tæks/

📺 **subsidy**

/'sʌbsɪdi/

⚖️ **equilibrium**

/'i:kwi'libriəm/

🔄 **disequilibrium**

/'di:si:kwi'libriəm/

↗ **excess demand**

/ek'ses dɪ'mænd/

📦 **shortage**

/'ʃɔ:tɪdʒ/

↗ **excess supply**

/ek'ses sə'plaɪ/

📦 **surplus**

/'sɜ:pləs/

↕ **price elasticity of demand**

/praɪs ɪlə'stɪsɪti ɒv dɪ'mænd/

English

Topic 2 · Writing: purpose, audience and accuracy

 **informal**

/ɪnˈfɔːml/

 **slang**

/slæŋ/

 **plan**

/plæn/

 **linking words**

/ˈlɪŋkɪŋ wɜːdz/

 **range**

/reɪndʒ/

 **accuracy**

/ˈækjʊərəsi/

 **tenses**

/ˈtensɪz/

Morning Reading

Grade 10 · Week 6

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Music is physics you can hear. Sound travels as a **wave**. The **frequency** of the wave decides the pitch : fast waves sound high, slow waves sound low. The **amplitude** decides how loud the sound is. Light is a **transverse wave**, like a rope shaken up and down, with a **crest** at the top and a **trough** at the bottom. Sound is a **longitudinal wave**: the air is pushed forward and back. The **wavelength** is the distance from one crest to the next.

Chemists count particles in a special way. Atoms are far too small to count one by one, so they use the **mole**. One mole of any substance contains the same huge number of particles, the **Avogadro constant**.

Why are concert tickets so expensive? Fans will pay almost any price, so demand is **inelastic**. But if the price of one brand of cola rises, people simply buy another brand: that demand is **elastic**. Sellers study **price elasticity of demand** before they set prices.

Talk about it :

1. Draw a wave in the air with your finger. Point to the crest, the trough, and one wavelength.
2. Name one product you would still buy if its price doubled. Why?

Physics

Topics 1–2 · Motion, forces and energy, Thermal physics

 **watt**

/wɒt/

% efficiency

/ɪ'fɪjənsi/

 **pressure**

/ˈpreʃə/

 **pascal**

/ˈpæskl/

 **depth**

/depθ/

 **states of matter**

/steɪts ɒv 'mætə/

 **motion**

/ˈməʊʃn/

 **density**

/ˈdensɪti/

 **solid**

/ˈsɒlɪd/

 **liquid**

/ˈlɪkwɪd/

 **gas**

/gæs/

 **vibrate**

/vaɪˈbreɪt/

 **kinetic energy**

/kɪˈnetɪk ˈenədʒi/

 **melting**

/ˈmeltɪŋ/

 **boiling**

/ˈbɔɪlɪŋ/

 **condensation**

/kɒndən'seɪʃn/

 **solidification**

/sə,lɪdɪfɪ'keɪʃn/

 **kinetic particle model**

/kɪ'netɪk 'pɑ:tɪkl 'mɒdl/

 **particle**

/'pɑ:tɪkl/

 **internal energy**

/ɪn'tɜːnl 'enədʒi/

 **transfer of thermal energy**

/'trænsfɜː ɒv 'θɜːml 'enədʒi/

 **thermal conductor**

/'θɜːml kən'dʌktə/

 **thermal insulator**

/'θɜːml 'ɪnsjuːlətə/

Chemistry

Topics 3–4 · Stoichiometry, Electrochemistry

 **state symbols**

/steɪt 'sɪmbəlz/

mole

/məʊl/

 **amount of substance**

/ə'maʊnt ɒv 'sʌbstəns/

Σ Avogadro constant

/,ævə'gædrəʊ 'kɒnstənt/

 **solution**

/sə'ljuːʃn/

⊖ **limiting reactant**

/ˈlɪmɪtɪŋ rɪˈæktənt/

🧪 **titration**

/taɪˈtreɪʃn/

⋮ **solute**

/ˈsɒljʊt/

⚡ **electrolysis**

/ɪlekt'rɒləsɪs/

🔪 **decomposition**

/ˌdiːkɒmpəˈzɪʃn/

🔌 **electrolytic cell**

/ɪˌlekt'rɒlɪtɪk sel/

🔌 **fuel cell**

/ˈfjuːəl sel/

💧 **electrolyte**

/ɪˈlekt'rəlaɪt/

⊕ **anode**

/ˈænəʊd/

⊖ **cathode**

/ˈkæθəʊd/

🚫 **inert**

/ɪˈnɜːt/

💎 **platinum**

/ˈplætɪnəm/

💧 **dilute**

/daɪˈluːt/

💧 **concentrated**

/ˈkɒnsəntreɪtɪd/

Biology

Topics 6-7 · Plant nutrition, Human nutrition



sucrose

/ˈsuːkrəʊs/



phloem

/ˈfləʊɪm/



nectar

/ˈnektə/



pollination

/ˌpɒlɪˈneɪʃn/



nitrate ions

/ˈnaɪtreɪt ˈaɪənz/



magnesium ions

/mægˈniːziəm ˈaɪənz/



light intensity

/laɪt ɪnˈtensɪti/



limiting factor

/ˈlɪmɪtɪŋ ˈfæktə/



control

/kənˈtrəʊl/



gas exchange

/gæs ɛksˈtʃeɪndʒ/



indicator

/ˈɪndɪkeɪtə/



adapted

/əˈdæptɪd/



cuticle

/ˈkjuːtɪkl/



epidermis

/ˌepɪˈdɜːmɪs/



mesophyll

/ˈmesəfɪl/

 **palisade mesophyll**

/ˈpælɪseɪd ˈmesəfɪl/

 **spongy mesophyll**

/ˈspʌndʒi ˈmesəfɪl/

 **air spaces**

/eə ˈspeɪsɪz/

 **stomata**

/ˈstəʊmətə/

 **guard cells**

/gɑːd selz/

 **vascular bundles**

/ˈvæskjələ ˈbʌndlz/

 **xylem**

/ˈzaɪləm/

 **balanced diet**

/ˈbælənst ˈdaɪət/

 **calcium**

/ˈkælsɪəm/

 **mineral ions**

/ˈmɪnərəl ˈaɪənz/

 **iron**

/ˈaɪən/

 **fibre**

/ˈfaɪbə/

 **scurvy**

/ˈskɜːvi/

 **rickets**

/ˈrɪkɪts/

 **alimentary canal**

/əlaɪˈmentəri kəˈnæl/

 **oesophagus**

/ɪˈsɒfəɡəs/

○ stomach			
/ˈstʌmək/			
↪ small intestine			
/smɔːl ɪnˈtestɪn/			
↪ duodenum			
/ˈdjuːədnəm/			
↪ ileum			
/ɪˈliːəm/			
↪ large intestine			
/lɑːdʒ ɪnˈtestɪn/			
↪ colon			
/ˈkɒlən/			

Mathematics

Topic 2 · Algebra and graphs

× ² quadratic			
/kwɒˈdrætɪk/			
□ completing the square			
/kəmˈpliːtɪŋ ðə skweə/			
÷ algebraic fraction			
/ˌældʒɪˈbreɪk ˈfrækʃn/			
÷ rational expression			
/ˈræʃənəl ɪkˈspresjən/			
= equation			
/ɪˈkweɪʒn/			
— linear			
/ˈlɪniə/			
② unknown			
/ʌnˈnəʊn/			
÷ fractional equation			
/ˈfrækʃənəl ɪˈkweɪʒn/			

 **simultaneous equations**

/ˌsɪməˈteɪniəs ɪˈkweɪʒnz/

 **quadratic formula**

/kwɒˈdrætɪk ˈfɔːmjələ/

 **change the subject**

/tʃeɪndʒ ðə ˈsʌbdʒekt/

 **inequality**

/miːˈkwɒləti/

 **number line**

/'nʌmbə laɪn/

 **region**

/'riːdʒən/

 **sequence**

/'siːkwəns/

 **term-to-term rule**

/tɜːm tə tɜːm ruːl/

Computer Science

Topic 3 · Hardware

 **actuator**

/'æktʃuːeɪtə/

 **projector**

/prəˈdʒektə/

 **inkjet printer**

/ɪŋkˈdʒet ˈprɪntə/

 **laser printer**

/'leɪzə ˈprɪntə/

 **speaker**

/'spiːkə/

 Primary storage			
<i>/ˈpraɪməri ˈstɔːrɪdʒ/</i>			
 random access memory			
<i>/ˈrændəm ˈæksɪs ˈmeməri/</i>			
 read only memory			
<i>/riːd ˈəʊnli ˈmeməri/</i>			
 volatile			
<i>/ˈvɒlətaɪl/</i>			
 non-volatile			
<i>/nɒn ˈvɒlətaɪl/</i>			
 Secondary storage			
<i>/ˈsekəndəri ˈstɔːrɪdʒ/</i>			
 magnetic storage			
<i>/mæɡˈnetɪk ˈstɔːrɪdʒ/</i>			
 optical storage			
<i>/ˈɒptɪkl ˈstɔːrɪdʒ/</i>			
 solid state storage			
<i>/ˈsɒlɪd steɪt ˈstɔːrɪdʒ/</i>			
 flash memory			
<i>/flæʃ ˈmeməri/</i>			
 virtual memory			
<i>/ˈvɜːtʃuəl ˈmeməri/</i>			
 network interface card			
<i>/ˈnetwɜːk ˈɪntəfeɪs kɑːd/</i>			
 media access control			
<i>/ˈmiːdiə ˈæksɪs kənˈtrəʊl/</i>			
 internet protocol			
<i>/ˈɪntənət ˈprəʊtəkɒl/</i>			

Economics

Topic 2 · The allocation of resources

 **determinants**

/di'tɜːmɪnənts/

 **elastic**

/ɪ'læstɪk/

 **inelastic**

/ɪnɪ'læstɪk/

 **unit elastic**

/ˈjuːnɪt ɪ'læstɪk/

 **total revenue**

/ˈtəʊtl 'revənjuː/

 **total expenditure**

/ˈtəʊtl ɛk'spendɪtʃə/

 **price elasticity of supply**

/praɪs ɪlə'stɪsɪti ɒv sə'plaɪ/

 **spare capacity**

/speə kə'pæsɪti/

 **stocks**

/stɒks/

 **market economy**

/ˈmɑːkɪt ɪ'kɒnəmi/

 **planned economy**

/plænd ɪ'kɒnəmi/

 **market failure**

/ˈmɑːkɪt 'feɪlɪə/

 **inefficient**

/ɪnɪ'fɪʃənt/

 **private cost**

/ˈpraɪvət kɒst/

English

Topics 2–3 · Writing: purpose, audience and accuracy, Writing an informal email

vocabulary

/vəʊ'kæbjʊləri/

synonyms

/'sɪnənɪmz/

grammar

/'græmə/

Aa spelling

/'speliŋ/

punctuation

/ˌpʌŋktʃu:'eɪʃn/

informal email

/ɪn'fɔːml 'iːmeɪl/

prompts

/prɒmpts/

Morning Reading

Grade 10 · Week 7

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Why does a straw look bent in a glass of water? Light changes direction when it moves from water into air. This is **refraction**. Glasses and cameras use a **converging lens** to bend light and make a clear **real image**. The distance from the lens to its **principal focus** is the **focal length**. Even the internet uses light: an **optical fibre** is a thin glass thread that carries light signals under the sea. The light cannot escape, because it always hits the wall of the fibre at more than the **critical angle**.

A computer is two things working together. **Hardware** is the physical machine you can touch. **Software** is the **programs** that tell it what to do. The most important program is the **operating system**: it starts the computer, manages memory, and runs your apps.

Markets are useful, but they are not perfect. A factory may make cheap toys but dirty the river. The factory pays its **private cost**, yet the village pays an **external cost**. Together these make the **social cost**. Economists call this **market failure**.

Talk about it :

1. Where have you seen refraction this week? Describe it.
2. A firework factory moves next to your school. What external costs does it bring?

Physics

Topics 2–3 · Thermal physics, Waves

 **thermal radiation**

/ˈθɜːml ˌreɪdɪˈeɪʃn/

 **thermal expansion**

/ˈθɜːml ekˈspænjən/

 **absolute zero**

/ˈæbsəluːt ˈziərəʊ/

 **Brownian motion**

/ˈbraʊniən ˈməʊʃn/

 **kelvin**

/ˈkelvɪn/

 **specific heat capacity**

/spəˈsɪfɪk hiːt kəˈpæsɪti/

 **evaporation**

/ɪˌvæpəˈreɪʃn/

 **cools down**

/kuːlz daʊn/

 **conduction**

/kənˈdʌkʃn/

 **delocalised electrons**

/diˈlɒkəlaɪzd ɪˈlektɹɒnz/

 **convection**

/kənˈvekʃn/

 **infrared**

/ˌɪnfɹəˈred/

 **dull**

/dʌl/

 **emitter**

/ɪˈmɪtə/

 absorber /əb'sɔ:bə/			
 reflector /rɪ'flektə/			
 wave /weɪv/			
 wave speed /weɪv spi:d/			
 transverse wave /træns'vɜ:s weɪv/			
 longitudinal wave /ˌlɒŋɡɪ'tju:dɪnl weɪv/			
 wavefront /'weɪvfrʌnt/			
 wavelength /'weɪvlɛŋθ/			
 frequency /'fri:kwənsi/			

Chemistry

Topics 4–10 · Electrochemistry, Chemical energetics, Chemistry of the environment

 bromine /'brəʊmaɪn/			
 chlorine /'klɔ:ri:n/			
 sulfuric acid /sʌl'fjʊərɪk 'æsɪd/			
 oxygen /'ɒksɪdʒɪn/			
 external circuit /ek'stɜ:nl 'sɜ:kɪt/			
 reduction /rɪ'dʌkʃn/			

↑	oxidation /ˌɒksɪˈdeɪʃn/			
÷	half-equation /hɑːf ɪˈkweɪʒn/			
💎	copper /ˈkɒpə/			
📦	electroplating /ɪˌlektərəʊˈpleɪtɪŋ/			
🧪	corrosion /kəˈrəʊʒn/			
🏭	pollutants /pəˈluːtənts/			
🧬	cancer /ˈkænsə/			
🔥	exothermic reaction /egzəˈθɜːmɪk rɪˈækʃn/			
❄️	endothermic reaction /ˌendəʊˈθɜːmɪk rɪˈækʃn/			
📡	reaction pathway diagram /rɪˈækʃn ˈpæθweɪ ˈdaɪəgræm/			
⚡	activation energy /ækˈtɪveɪʃn ˈenədʒi/			
🔗	bond energy /bɒnd ˈenədʒi/			
🔪	bond breaking /bɒnd ˈbreɪkɪŋ/			
🔗	bond making /bɒnd ˈmeɪkɪŋ/			
🏠	surroundings /səˈraʊndɪŋz/			
🔥	combustion /kəmˈbʌstʃn/			

Biology

Topic 7 · Human nutrition

↓ **rectum**

/ˈrektəm/

⊙ **anus**

/ˈeɪnəs/

💧 **salivary glands**

/ˈsælɪvəri glændz/

🌀 **pancreas**

/ˈpæŋkriəs/

🛡️ **liver**

/ˈlɪvə/

💧 **gall bladder**

/ɡɔːl ˈblædə/

📥 **ingestion**

/ɪnˈdʒestʃn/

🍏 **nutrients**

/ˈnjuːtriənts/

→ **assimilation**

/əˌsɪmɪˈleɪʃn/

🗑️ **egestion**

/ɪˈdʒestʃn/

🗑️ **faeces**

/ˈfiːsiːz/

😊 **teeth**

/tiːθ/

✂️ **incisors**

/ɪnˈsaɪzəz/

△ **canines**

/ˈkeɪnənz/

□ **premolars**

/priːˈməʊləz/

 molars /'məʊləz/			
 enamel /'næmə/			
 dentine /'denti:n/			
 pulp /pʌlp/			
 nerves /nɜ:vz/			
 blood vessels /blʌd 'veslz/			
 cement /si'ment/			
 gums /gʌmz/			
 bile /baɪl/			
 emulsifies /'mʌlsɪfaɪz/			
 lipase /'lɪpeɪs/			
 insoluble /ɪn'sɒljʊ:bl/			
 soluble /'sɒljʊ:bl/			
 amylase /'æmɪleɪz/			
 protease /'prəʊteɪs/			
 hydrochloric acid /ˌhaɪdrə'klɔ:ɪk 'æsɪd/			
 gastric juice /'gæstrɪk dʒu:s/			

 **microorganisms**

/ˌmaɪkrəʊ'ɔːɡənɪzəmz/

 **acidic**

/ə'sɪdɪk/

 **maltose**

/'mɒltəʊs/

 **maltase**

/'mɒlteɪs/

 **epithelium**

/ˌepɪ'thiːliəm/

Mathematics

Topic 2 · Algebra and graphs

 **cubic**

/'kjuːbɪk/

 **exponential sequence**

/ˌekspə'nenʃl 'siːkwəns/

 **direct proportion**

/daɪ'rekt prə'pɔːʃn/

 **constant**

/'kɒnstənt/

 **inverse proportion**

/ɪn'vɜːs prə'pɔːʃn/

 **gradient**

/'ɡreɪdɪənt/

 **rate of change**

/reɪt ɒv tʃeɪndʒ/

 **travel graph**

/'trævl græf/

 **conversion graph**

/kən'vɜːʃn græf/

 acceleration /ək,selə'reɪʃn/			
 deceleration /dɪ,selə'reɪʃn/			
 distance /'dɪstəns/			
 table of values /'teɪbl ɒv 'væljuːz/			
 coordinates /kəʊ'ɔːdɪnəts/			
+ axis /'æksɪs/			
 roots /ruːts/			
× intersection point /ˌɪntə'sekʃn pɔɪnt/			

Computer Science

Topic 4 · Software

 Hardware /'hɑːdweə/			
 physical /'fɪzɪkl/			
 Software /'sɒftweə/			
< > programs /'prəʊgræmz/			
 System software /'sɪstəm 'sɒftweə/			
 operating system /'ɒperetɪŋ 'sɪstəm/			
 compiler /kəm'paɪlə/			

 linker /'lɪŋkə/			
 device driver /dɪ'vaɪs 'draɪvə/			
 utility software /ju:'tɪlɪtɪ 'sɒftweə/			
 Application software /ˌæplɪ'keɪʃn 'sɒftweə/			
 word processing /wɜ:d 'prəʊsesɪŋ/			
 spreadsheet /'spredʃi:t/			
 database management system /'deɪtəbeɪs 'mænɪdʒmənt 'sɪstəm/			
 web browser /web 'braʊzə/			
 user interface /'ju:zə 'ɪntəfeɪs/			
 peripherals /pə'rɪfərəlz/			
 multitasking /'mʌltɪtæskɪŋ/			
 platform /'plætfɔ:m/			
 interrupt /'ɪntərʌpt/			

Economics

Topic 2 · The allocation of resources

 **external cost**

/ek'stɜːnl kɒst/

 **social cost**

/'səʊʃl kɒst/

 **private benefit**

/'praɪvət 'benɪfɪt/

 **external benefit**

/ek'stɜːnl 'benɪfɪt/

 **social benefit**

/'səʊʃl 'benɪfɪt/

 **merit goods**

/'merɪt ɡʊdz/

 **demerit goods**

/'demərɪt ɡʊdz/

 **public goods**

/'pʌblɪk ɡʊdz/

 **monopoly**

/mə'nɒpəli/

 **mixed economy**

/mɪkst ɪ'kɒnəmi/

 **private sector**

/'praɪvət 'sektə/

 **public sector**

/'pʌblɪk 'sektə/

 **intervention**

/,ɪntə'veɪʃn/

 **maximum price**

/'mæksɪməm praɪs/

English

Topic 3 · Writing an informal email

 **tone**

/təʊn/

 **greeting**

/'gri:tɪŋ/

 **closing**

/'kləʊzɪŋ/

 **short forms**

/ʃɔ:t fɔ:mz/

 **developed**

/dɪ'veləpt/

 **reason**

/'ri:zn/

Morning Reading

Grade 10 · Week 8

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Invisible waves are all around you right now. **Radio waves** carry music to cars. **Microwaves** heat food and carry phone signals. **Ultraviolet** light from the Sun can burn your skin. Doctors use **X-rays** to see bones, and **gamma rays** to treat cancer. All of these can travel through empty space, a **vacuum**. Sound cannot: it always needs a **medium** such as air or water. Shout at a big wall and you hear an **echo**, your own sound wave reflected back.

Before money, people used **barter**: they traded fish for rice or shoes for tea. It was slow, because both sides had to want what the other had. **Money** solved this. It is a **medium of exchange** that everyone accepts, and a **store of value** you can keep for later.

Computers only understand **machine code**, patterns of ones and zeros. People write in a **high-level language** like Python, and a **translator** turns it into machine code.

Talk about it :

1. Name three invisible waves you used today and what they did for you.
2. Imagine one week without money. How would you get your lunch?

Physics

Topic 3 · Waves

^ **crest**

/krest/

v **trough**

/trof/

↕ **amplitude**

/'æmplitju:d/

↔ **propagation**

/,propə'geɪʃn/

🌀 **ripple tank**

/'rɪpl tæŋk/

[:] **reflection**

/rɪ'flekʃn/

△ **angle of reflection**

/'æŋgl ov rɪ'flekʃn/

◢ **angle of refraction**

/'æŋgl ov rɪ'frækʃn/

↺ **total internal reflection**

/'təʊtl ɪn'tɜːnl rɪ'flekʃn/

⚡ **critical angle**

/'krɪtɪkl 'æŋgl/

↷ **refraction**

/rɪ'frækʃn/

> **angle of incidence**

/'æŋgl ov 'ɪnsɪdəns/

▣ **diffraction**

/dɪ'frækʃn/

☀ **light**

/laɪt/

⊥ **normal**

/'nɔːml/

 plane mirror /pleɪn 'mɪrə/			
 refractive index /rɪ'fræktɪv 'ɪndeks/			
 optical fibre /'ɒptɪkl 'faɪbə/			
 converging lens /kən'vɜːdʒɪŋ lenz/			
 diverging lens /daɪ'vɜːdʒɪŋ lenz/			
 principal focus /'prɪnsɪpl 'fəʊkəs/			
 focal length /'fəʊkl leŋθ/			
 real image /rɪəl 'ɪmɪdʒ/			

Chemistry

Topics 5–6 · Chemical energetics, Chemical reactions

 neutralisation /ˌnjuːtrəlaɪ'zeɪʃn/			
 enthalpy change /en'θælpɪ tʃeɪndʒ/			
 colliding /kə'lɑɪdɪŋ/			
 physical change /'fɪzɪkl tʃeɪndʒ/			
 chemical change /'kemɪkl tʃeɪndʒ/			
 precipitate /prɪ'sɪpɪteɪt/			
 rate of reaction /reɪt ɒv rɪ'ækʃn/			

↔ **reversible reaction**

/rɪ'vɜːsɪbl rɪ'ækʃn/

→ **forward reaction**

/'fɔːwəd rɪ'ækʃn/

← **reverse reaction**

/rɪ'vɜːs rɪ'ækʃn/

↑↓ **redox reaction**

/rɪ'dɒks rɪ'ækʃn/

⚡ **collision theory**

/kə'lɪʒn 'θɪəri/

□ **surface area**

/'sɜːfɪs 'eəriə/

⚡ **catalyst**

/'kætəlist/

✂ **enzymes**

/'enzaimz/

💉 **syringe**

/sɪ'rɪndʒ/

💧 **hydrated**

/haɪ'dreɪtɪd/

☞ **anhydrous**

/æn'haidrəs/

🔒 **closed system**

/kləʊzd 'sɪstəm/

↔ **position of equilibrium**

/pə'zɪʃn ɒv ɪ'kwɪ'libriəm/

⚖ **equilibrium**

/ɪ'kwɪ'libriəm/

❄ **endothermic**

/,endəθ'θɜːmɪk/

Biology

Topics 7–9 · Human nutrition, Transport in plants, Transport in animals

✂ **pepsin**

/ˈpepsɪn/

✂ **trypsin**

/ˈtrɪpsɪn/

⚗ **alkaline**

/ˈælkəlaɪn/

⚖ **neutralises**

/ˈnjuːtrəlaɪzɪz/

⋮ **villi**

/ˈvɪlaɪ/

⋮ **microvilli**

/ˈmaɪkrəʊvɪlaɪ/

⋮ **capillaries**

/ˈkæpɪləɪrɪz/

💧 **lacteal**

/ˈlæktɪəl/

▢ **support**

/səˈpɔːt/

🩸 **vessels**

/ˈveslz/

🧱 **lignin**

/ˈlɪɡnɪn/

📦 **cortex**

/ˈkɔːteks/

👤 **stain**

/steɪn/

💧 **transpiration**

/trænspeɪˈreɪʃn/

☁ **water vapour**

/ˈwɔːtə ˈveɪpə/

 evaporates <i>/t'væpəreɪts/</i>			
 diffuses <i>/dɪ'fjuːzɪz/</i>			
 wind speed <i>/wɪnd spiːd/</i>			
 humidity <i>/hjuː'mɪdɪti/</i>			
 transpiration pull <i>/trænspe'reɪʃn pʊl/</i>			
 forces of attraction <i>/'fɔːsɪz ɒv ə'trækʃn/</i>			
 column <i>/'kɒləm/</i>			
 wilts <i>/wɪltz/</i>			
 translocation <i>/trænsləʊ'keɪʃn/</i>			
 sources <i>/'sɔːsɪz/</i>			
 sinks <i>/sɪŋks/</i>			
 circulatory system <i>/,sɜːkjʊ'leɪtəri 'sɪstəm/</i>			
 heart <i>/hɑːt/</i>			
 pump <i>/pʌmp/</i>			
 valves <i>/vælvz/</i>			
 single circulation <i>/'sɪŋgl ,sɜːkjʊ'leɪʃn/</i>			

∞ double circulation

/ˈdʌbl ˌsɜːkjʊˈleɪʃn/

↓ pressure

/ˈpreʃə/

⟨⟩ septum

/ˈseptəm/

▮ atrium

/ˈeɪtriəm/

♥ ventricle

/ˈventrɪkl/

Mathematics

Topic 2 · Algebra and graphs

[:] symmetry

/ˈsɪmətri/

⊕ intercept

/ˌɪntəˈsept/

↷ parabola

/pəˈræbələ/

↻ turning point

/ˈtɜːnɪŋ poɪnt/

— asymptote

/ˈæsimptəʊt/

⤴ differentiation

/ˌdɪfəˌrenʃiˈeɪʃn/

↗ tangent

/ˈtændʒənt/

↗ derivative

/dɪˈrɪvətɪv/

▯ stationary point

/ˈsteɪʃənəri poɪnt/

^ maximum

/ˈmæksɪməm/

✓ **minimum**

/ˈmɪnɪmə/

f **function**

/ˈfʌŋkʃn/

↔ **domain**

/dəˈmeɪn/

↑↓ **range**

/reɪndʒ/

↔ **inverse function**

/ɪnˈvɜːs ˈfʌŋkʃn/

⊞ **composite function**

/ˈkɒmpəzɪt ˈfʌŋkʃn/

Computer Science

Topics 4–5 · Software, The internet and its uses

<> **programming language**

/ˈprəʊɡræmɪŋ ˈlæŋɡwɪdʒ/

<> **high-level language**

/haɪ ˈleɪl ˈlæŋɡwɪdʒ/

01 **low-level language**

/ləʊ ˈleɪl ˈlæŋɡwɪdʒ/

⊞ **machine code**

/məˈʃiːn kəʊd/

<> **assembly language**

/əˈsembli ˈlæŋɡwɪdʒ/

⊞ **specific**

/spəˈsɪfɪk/

→ **translator**

/trænˈslerta/

 interpreter /m'tɜːprɪtə/			
<> integrated development environment /'ɪntɪɡreɪtɪd dɪ'veləpmənt en'veɪrənmənt/			
 code editor /kəʊd 'edɪtə/			
 run time environment /rʌn taɪm en'veɪrənmənt/			
 error diagnostics /'erə ,daɪəɡ'nɒstɪks/			
 auto-completion /'ɔːtəʊ kəm'pliːʃn/			
 auto-correction /'ɔːtəʊ kə'rekʃn/			
 prettyprinting /'preɪtɪprɪntɪŋ/			
 internet /'ɪntənət/			
 infrastructure /'ɪnfəstrʌktʃə/			
 world wide web /wɜːld waɪd web/			
 websites /'websaɪts/			
 uniform resource locator /'juːnɪfɔːm rɪ'zɔːs ləʊ'keɪtə/			

Economics

Topics 2-3 · The allocation of resources, Microeconomic decision-makers

⬆ **minimum price**

/ˈmɪnɪməm praɪs/

💰 **indirect tax**

/ɪndɪˈrekt tæks/

📋 **regulation**

/ˌregjʊˈleɪʃn/

📦 **direct provision**

/daɪˈrekt prəˈvɪʒn/

↔ **barter**

/ˈbɑːtə/

💵 **money**

/ˈmʌni/

↔ **medium of exchange**

/ˈmiːdiəm ɒv ɛksˈtʃeɪndʒ/

🏠 **store of value**

/stɔː ɒv ˈvæljuː/

📊 **unit of account**

/ˈjuːnɪt ɒv əˈkaʊnt/

🕒 **means of deferred payment**

/miːnz ɒv dɪˈfɜːd ˈpeɪmənt/

🛡 **durable**

/ˈdjʊərəbl/

📦 **portable**

/ˈpɔːtəbl/

÷ **divisible**

/dɪˈvɪzɪbl/

🏦 **central bank**

/ˈsentrəl bæŋk/

English

Topics 3-4 · Writing an informal email, Writing a formal letter or email

 example <i>/eg'zæmpl/</i>			
 detail <i>/'di:teɪl/</i>			
 semi-formal <i>/'semi 'fɔ:ml/</i>			
 head teacher <i>/hed 'ti:tʃə/</i>			
 manager <i>/'mænɪdʒə/</i>			
 event organiser <i>/ɪ'vent 'ɔ:gənaɪzə/</i>			
 format <i>/'fɔ:mæt/</i>			

Morning Reading

Grade 10 · Week 9

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Take off a wool hat on a dry winter day and your hair stands up. Rubbing gives your hair extra **electric charge**. Charges push and pull: like charges **repel**, opposite charges **attract**. When charge flows through a wire, we call it an **electric current**. A battery gives **direct current**, which flows one way. The sockets at home give **alternating current**, which changes direction many times each second.

When you type an address into a browser, you use the **world wide web**. Every device on the **internet** has an **IP address**, like a house number. Your browser asks a **web server** for the page, and the server sends it back to you.

Where does your money sleep at night? In a bank. **Commercial banks** keep savings safe and lend money to firms. The **central bank** is the bank of the whole country: it prints the money and sets the **interest rate**, the price of **borrowing**.

Talk about it :

1. Why does your hair stand up after you take off a wool hat?
2. If the interest rate rises, will people save more or borrow more? Why?

Physics

Topics 3-4 · Waves, Electricity and magnetism

 **virtual image**

/ˈvɜːtʃuːəl ˈɪmɪdʒ/

 **magnifying glass**

/ˈmæɡnɪfaɪɪŋ glæs/

 **prism**

/ˈprɪzəm/

 **spectrum**

/ˈspektrəm/

 **electromagnetic spectrum**

/ɪˌlektərəmægˈnetɪk ˈspektrəm/

 **dispersion**

/dɪˈspɜːʃn/

 **monochromatic**

/ˌmɒnəʊkrəʊˈmætɪk/

 **vacuum**

/ˈvækjuːm/

 **radio waves**

/ˈreɪdiəʊ weɪvz/

 **ultraviolet**

/ˌʊltrəˈvaɪələɪt/

 **X-rays**

/eks reɪz/

 **gamma rays**

/ˈɡæmə reɪz/

 **sound**

/saʊnd/

 **compression**

/kəmˈpreʃn/

 **rarefaction**

/ˌreəriˈfækʃn/

 medium /'mi:diəm/	_____	_____	_____
 echo /'ekəʊ/	_____	_____	_____
 magnet /'mæɡnit/	_____	_____	_____
 temporary magnet /'tempərɪ 'mæɡnit/	_____	_____	_____
 permanent magnet /'pɜ:mənənt 'mæɡnit/	_____	_____	_____
 north pole /nɔ:θ pəʊl/	_____	_____	_____
 south pole /saʊθ pəʊl/	_____	_____	_____
 magnetic material /mæg'netɪk mə'tɪəriəl/	_____	_____	_____

Chemistry

Topics 6–7 · Chemical reactions, Acids, bases and salts

 exothermic /egzə'ðɜ:mɪk/	_____	_____	_____
 Haber process /'heɪbə 'prəʊses/	_____	_____	_____
 Contact process /'kɒntækt 'prəʊses/	_____	_____	_____
 methane /'mi:θeɪn/	_____	_____	_____
 nitrogen /'naɪtrədʒɪn/	_____	_____	_____
 iron /'aɪən/	_____	_____	_____

 sulfur <i>/ˈsʌlfɜː/</i>			
 vanadium(V) oxide <i>/væˈneɪdɪəm ˈɒksaɪd/</i>			
 compromise <i>/ˈkɒmprəmaɪz/</i>			
# oxidation number <i>/ˌɒksɪˈdeɪʃn ˈnʌmbə/</i>			
↑ oxidising agent <i>/ˌɒksɪdaɪzɪŋ ˈeɪdʒənt/</i>			
↓ reducing agent <i>/rɪˈdjuːsɪŋ ˈeɪdʒənt/</i>			
 potassium manganate(VII) <i>/pəˈtæsiəm ˈmæŋɡəneɪt/</i>			
 potassium iodide <i>/pəˈtæsiəm ˈaɪədaɪd/</i>			
 iodine <i>/ˈaɪədiːn/</i>			
 acid <i>/ˈæsaɪd/</i>			
 strong acid <i>/strɒŋ ˈæsaɪd/</i>			
 hydrochloric acid <i>/ˌhaɪdrəˈklɔːrɪk ˈæsaɪd/</i>			
 weak acid <i>/wiːk ˈæsaɪd/</i>			
 ethanoic acid <i>/ˌeθəˈneɪk ˈæsaɪd/</i>			
 salt <i>/sɒlt/</i>			
 carbonates <i>/ˈkɑːbəneɪts/</i>			

Biology

Topics 7–10 · Human nutrition, Transport in animals, Diseases and immunity

♥ coronary arteries

/ˈkɒrənəri ˈɑːtəriz/

💧 oxygenated blood

/ˈɒksɪdʒeneɪtɪd bləd/

🩸 deoxygenated blood

/diːˈɒksɪdʒeneɪtɪd bləd/

🏠 atrioventricular valves

/ˌeɪtri,əʊvənˈtrɪkjʊlə vælvz/

♥ semilunar valves

/ˌsemiˈluːnə vælvz/

✂ contract

/ˈkɒntrækt/

📈 pulse

/pʌls/

♥ heart rate

/hɑːt reɪt/

♥ coronary heart disease

/ˈkɒrənəri hɑːt diˈziːz/

⚠ risk factors

/rɪsk ˈfæktəz/

◯ lumen

/ˈluːmen/

🩸 arteries

/ˈɑːtəriz/

🩸 veins

/veɪnz/

➤ aorta

/eɪˈɔːtə/

↓	vena cava			
	/ˈvi:nə ˈkɑ:və/			
↑	pulmonary artery			
	/ˈpʌlmənəri ˈɑ:təri/			
←	pulmonary vein			
	/ˈpʌlmənəri veɪn/			
💧	renal artery			
	/ˈri:nl ˈɑ:təri/			
💧	renal vein			
	/ˈri:nl veɪn/			
→	hepatic artery			
	/heˈpætɪk ˈɑ:təri/			
↓	hepatic vein			
	/heˈpætɪk veɪn/			
🔗	hepatic portal vein			
	/heˈpætɪk ˈpɔ:tl veɪn/			
💧	haemoglobin			
	/ˌhi:məˈgləʊbɪn/			
🛡️	white blood cells			
	/waɪt bləd selz/			
⋮	platelets			
	/ˈpleɪtlɪts/			
⊙	clot			
	/klot/			
💧	plasma			
	/ˈplæzmə/			
🧪	urea			
	/ju:ˈriə/			
⚡	hormones			
	/ˈhɔ:məʊnz/			
🛡️	phagocytes			
	/ˈfæɡəsarts/			
🍽️	phagocytosis			
	/ˌfæɡəsiˈtəʊsɪs/			

 **lymphocytes**
/'lɪmfəsaɪtəz/

 **antibodies**
/'æntɪbɒdɪz/

 **fibrinogen**
/'fɪbrɪnədʒən/

 **fibrin**
/'fɪbrɪn/

 **pathogen**
/'pæθədʒən/

Mathematics

Topics 3–4 · Coordinate geometry, Geometry

 **horizontal**
/'hɒrɪ'zɒntl/

 **vertical**
/'vɜːtɪkl/

 **origin**
/'ɒrɪdʒɪn/

 **quadrants**
/'kwɒdrənts/

 **line segment**
/'laɪn 'seɡmənt/

 **length**
/leŋθ/

 **Pythagoras' theorem**
/'paɪ'θæɡərəs 'θiərəm/

 **midpoint**
/'mɪdpoɪnt/

 **parallel**
/'pærəlel/

 **perpendicular**
/ˌpɜːpən'dɪkjələ/

 right angle /raɪt 'æŋɡl/			
 perpendicular bisector /ˌpɜːpən'dɪkjələ baɪ'sektə/			
• vertex /'vɜːteks/			
> acute angle /ə'kjʊt 'æŋɡl/			
>> obtuse angle /ɒb'tjuːs 'æŋɡl/			
 reflex angle /'rɪːfleks 'æŋɡl/			
× vertically opposite angles /'vɜːtɪkli 'ɒpəzɪt 'æŋɡlz/			

Computer Science

Topic 5 · The internet and its uses

 rendering /'rendərɪŋ/			
<> hypertext markup language /'haɪpətɛkst 'mɑːkʌp 'læŋɡwɪdʒ/			
 IP address /ˌaɪ 'piː ə'dres/			
 domain name service /də'meɪn neɪm 'sɜːvɪs/			
 web server /web 'sɜːvə/			
 session /'seʃn/			
 persistent /pə'sɪstənt/			

 **user preferences**

/ˈjuːzə ˈprefrənsɪz/

 **digital currency**

/ˈdɪdʒɪtl ˈkʌrənsi/

 **electronic form**

/ɪlekˈtrɒnɪk fɔːm/

 **blockchain**

/ˈblɒkʃeɪn/

 **digital ledger**

/ˈdɪdʒɪtl ˈledʒə/

 **transaction**

/trænˈsækʃn/

 **timestamp**

/ˈtaɪmstæmp/

 **hash value**

/hæʃ ˈvæljuː/

 **cyber security**

/ˈsaɪbə sɪˈkjʊərɪti/

 **brute force attack**

/bruːt fɔːs əˈtæk/

 **data interception**

/ˈdeɪtə ˌɪntəˈsepʃn/

 **distributed denial of service**

/ˈdɪstrɪbjʊːtɪd dɪˈnaɪəl ɒv ˈsɜːvɪs/

 **hacking**

/ˈhækɪŋ/

Economics

Topic 3 · Microeconomic decision-makers

% interest rate

/ˈɪntrest reɪt/

🏦 commercial banks

/kəˈmɜːʃl bæŋks/

🏠 household

/ˈhaʊshəʊld/

💰 saving

/ˈseɪvɪŋ/

👤 borrowing

/ˈbɒrəʊɪŋ/

😊 confidence

/ˈkɒnfɪdəns/

👤 occupation

/ˌɒkjəˈpeɪʃn/

🔑 skill

/skɪl/

🎓 qualifications

/ˌkwɒlɪfɪˈkeɪʃnz/

👥 trade unions

/treɪd ˈjuːnɪənz/

⚖️ discrimination

/dɪˌskrɪmɪˈneɪʃn/

👤 division of labour

/dɪˈvɪʒn ɒv ˈleɪbə/

⚙️ specialisation

/ˌspeʃəlaɪˈzeɪʃn/

English

Topics 4–5 · Writing a formal letter or email, Writing a report

😊 **polite**

/pə'laɪt/

♥ **grateful**

/'ɡreɪtfl/

📄 **report**

/rɪ'pɔ:t/

📅 **event**

/ɪ'vent/

📍 **situation**

/,sɪtʃu:'eɪʃn/

✓ **facts**

/fæktz/

✓✓ **factual**

/'fæktʃu:əl/

Morning Reading

Grade 10 · Week 10

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

A message says you have won a phone: just click the link and enter your password. Stop! This is **phishing**, a trick to steal your details. Criminals also use **malware**, harmful software such as a **virus**, or try a **brute force attack**, testing thousands of passwords until one works. Some do not attack computers at all; they trick people. That is **social engineering**. Good **cyber security** habits, such as strong passwords and careful clicking, protect you.

Why are factories so fast? Because of the **division of labour**. Each worker repeats one small job and becomes an expert at it. This **specialisation** raises **productivity**: more is made in the same time. Big factories also enjoy **economies of scale**, so each item costs less to make.

In physics you built an **electromagnet** this week: a coil of wire around soft iron. Switch on the current and it becomes a magnet; switch off and the magnetism is gone.

Talk about it :

1. A stranger's email asks for your password. What do you do, and why?
2. Making dumplings with your class: how would you divide the labour?

Physics

Topic 4 · Electricity and magnetism

 **magnetic field**

/mæg'netik fi:ld/

 **magnetic field lines**

/mæg'netik fi:ld laɪnz/

 **electric field**

/ɪ'lektrɪk fi:ld/

 **electric current**

/ɪ'lektrɪk 'kʌrənt/

 **conventional current**

/kən'venʃənl 'kʌrənt/

 **direct current**

/daɪ'rekt 'kʌrənt/

 **alternating current**

/ɔ:ltəneɪtɪŋ 'kʌrənt/

 **electric charge**

/ɪ'lektrɪk tʃɑ:dʒ/

 **positive charge**

/pəzɪtɪv tʃɑ:dʒ/

 **negative charge**

/negətɪv tʃɑ:dʒ/

 **point charge**

/pɔɪnt tʃɑ:dʒ/

 **repel**

/rɪ'pel/

 **attract**

/ə'trækt/

 **induced magnetism**

/ɪn'dju:st 'mæɡnɪtɪzəm/

 soft iron <i>/sɒft 'aɪən/</i>			
 iron filings <i>/'aɪən 'faɪlɪŋz/</i>			
 soft-iron core <i>/sɒft 'aɪən kɔː/</i>			
 magnetise <i>/'mæɡnɪtaɪz/</i>			
 steel <i>/stiːl/</i>			
 unmagnetised <i>/ʌn'mæɡnɪtaɪzd/</i>			
 region <i>/'riːdʒən/</i>			
 compass <i>/'kæmpəs/</i>			
 electromagnet <i>/ɪˌlektərəʊ'mæɡnɪt/</i>			

Chemistry

Topic 7 · Acids, bases and salts

 carbon dioxide <i>/'kɑːbən daɪ'ɒksaɪd/</i>			
 indicator <i>/'ɪndɪkeɪtə/</i>			
 universal indicator <i>/juːnɪ'vɜːsl 'ɪndɪkeɪtə/</i>			
 litmus <i>/'lɪtməs/</i>			
 thymolphthalein <i>/'θaɪməlfθæliːn/</i>			

	methyl orange <i>/ˈmiːθaɪl ˈɒrɪndʒ/</i>			
	oxides <i>/ˈɒksaɪdz/</i>			
	hydroxides <i>/haɪˈdrɒksaɪdz/</i>			
	alkali <i>/ˈælkəlaɪ/</i>			
	base <i>/beɪs/</i>			
	ammonium salts <i>/æˈmɒniəm sɒlts/</i>			
	dissociated <i>/dɪˈsəʊʃieɪtɪd/</i>			
	acidic <i>/əˈsɪdɪk/</i>			
	neutral <i>/ˈnjuːtrəl/</i>			
	alkaline <i>/ˈælkəlaɪn/</i>			
	amphoteric <i>/ˌæmfəʊˈterɪk/</i>			
	soluble <i>/ˈsɒljʊːbl/</i>			
	insoluble <i>/ɪnˈsɒljʊːbl/</i>			
	nitrates <i>/ˈnaɪtreɪts/</i>			
	chlorides <i>/ˈklɔːraɪdz/</i>			
	sulfates <i>/ˈsʌlfeɪts/</i>			
	excess <i>/ekˈses/</i>			

Biology

Topics 10–11 · Diseases and immunity, Gas exchange in humans

 **disease**

/di'zi:z/

 **transmissible disease**

/træn'smisɪbl di'zi:z/

 **transmitted**

/træn'smitɪd/

 **direct contact**

/daɪ'rekt 'kɒntækt/

 **body fluids**

/'bɒdi 'flu:ɪdz/

 **contaminated**

/kən'tæmɪneɪtɪd/

 **defences**

/dɪ'fensɪz/

 **stomach acid**

/'stʌmək 'æsɪd/

 **hygienic**

/haɪ'dʒi:nɪk/

 **sewage treatment**

/'su:ɪdʒ 'tri:tment/

 **antigens**

/'æntɪdʒenz/

 **active immunity**

/'æktɪv ɪ'mju:nɪti/

 **vaccination**

/ˌvæksɪ'neɪʃn/

 **memory cells**

/'meməri selz/

 **passive immunity**

/ˈpæsɪv ɪˈmjʊnɪti/

 **placenta**

/pləˈsentə/

 **breast milk**

/ˈbreɪst mɪlk/

 **breast-feeding**

/ˈbreɪst ˈfiːdɪŋ/

 **infants**

/ˈɪnfənts/

 **cholera**

/ˈkɒləərə/

 **toxin**

/ˈtɒksɪn/

 **chloride ions**

/ˈklɒːraɪd ˈaɪənz/

 **diarrhoea**

/ˌdaɪəˈrɪə/

 **dehydration**

/ˌdiːˈhaɪˈdreɪʃn/

 **ventilation**

/ˌventɪˈleɪʃn/

 **larynx**

/ˈlærɪŋks/

 **bronchioles**

/ˈbrɒŋkiəʊlz/

 **alveoli**

/ˈælvəli/

 **ribs**

/rɪbz/

 **diaphragm**

/ˈdaɪəfræm/

 **intercostal muscles**

/ˌɪntəˈkɒstl ˈmʌslz/

 **cartilage**

/'kɑːtɪlɪdʒ/

 **thorax**

/'θɔːræks/

↓ **inhaling**

/ɪnˈheɪlɪŋ/

↑ **exhaling**

/eksˈheɪlɪŋ/

 **limewater**

/'laɪmwɔːtə/

 **brain**

/breɪn/

Mathematics

Topic 4 · Geometry

 **corresponding angles**

/ˌkɒrɪˈspɒndɪŋ ˈæŋɡlz/

↗ **alternate angles**

/ɔːlˈtɜːnət ˈæŋɡlz/

[] **co-interior angles**

/kəʊ ɪnˈtɪəriə ˈæŋɡlz/

⊕ **supplementary**

/ˌsʌplɪˈmentəri/

△ **triangle**

/'traɪæŋɡl/

△ **equilateral**

/ˌiːkwɪˈlætərəl/

△ **isosceles**

/aɪˈsɒsəliːz/

 scalene /'skeɪlɪn/	_____	_____	_____
 quadrilateral /'kwɒdrɪ'lætərəl/	_____	_____	_____
 square /skweə/	_____	_____	_____
 rectangle /'rektæŋɡl/	_____	_____	_____
 parallelogram /ˌpærə'leləgræm/	_____	_____	_____
 rhombus /'rɒmbəs/	_____	_____	_____
 kite /kaɪt/	_____	_____	_____
 trapezium /trə'pi:ziəm/	_____	_____	_____
 polygon /'pɒlɪɡən/	_____	_____	_____

Computer Science

Topic 5 · The internet and its uses

 malware /'mælweə/	_____	_____	_____
 pharming /'fɑ:mɪŋ/	_____	_____	_____
 phishing /'fɪʃɪŋ/	_____	_____	_____
 social engineering /'səʊʃl ˌendʒɪ'niəriŋ/	_____	_____	_____
 virus /'vaɪrəs/	_____	_____	_____
 worm /wɜ:m/	_____	_____	_____

 **Trojan horse**

/ˈtrəʊdʒn hɔːs/

 **spyware**

/ˈspaɪweə/

 **adware**

/ˈædweə/

 **ransomware**

/ˈrænsəmweə/

 **access levels**

/ˈækses ˈlevlz/

 **anti-malware**

/ˈænti ˈmælweə/

 **anti-virus**

/ˈænti ˈvaɪrəs/

 **anti-spyware**

/ˈænti ˈspaɪweə/

 **authentication**

/ɔːθentiˈkeɪʃn/

 **biometrics**

/ˌbaɪəʊˈmetrɪks/

 **password**

/ˈpæswɜːd/

 **two-step verification**

/tuː step ˌverɪfɪˈkeɪʃn/

 **firewall**

/ˈfaɪəwɔːl/

 **privacy settings**

/ˈprɪvəsi ˈsetɪŋz/

Economics

Topic 3 · Microeconomic decision-makers

 **merger**

/ˈmɜːdʒə/

 **horizontal merger**

/ˌhɒrɪˈzɒntl 'mɜːdʒə/

 **vertical merger**

/ˈvɜːtɪkl 'mɜːdʒə/

 **conglomerate merger**

/kənˈglɒməreɪt 'mɜːdʒə/

 **business failure**

/ˈbɪznəs ˈfeɪlɪə/

 **labour-intensive**

/ˈleɪbə ɪnˈtensɪv/

 **capital-intensive**

/ˈkæpɪtl ɪnˈtensɪv/

 **productivity**

/ˌprɒdækˈtɪvɪti/

 **economies of scale**

/ɪˈkɒnəmɪz ɒv skeɪl/

 **diseconomies of scale**

/ˌdɪsɪˈkɒnəmɪz ɒv skeɪl/

 **cost**

/kɒst/

 **fixed costs**

/fɪkst kɒsts/

 **variable costs**

/ˈveəriəbl kɒsts/

 **total cost**

/ˈtəʊtl kɒst/

English

Topics 5–6 · Writing a report, Writing an article

headings

/ˈhedɪŋz/

opinion

/əˈpɪniən/

recommendations

/ˌrekəmenˈdeɪʃnz/

conclusion

/kənˈkluːʒn/

article

/ˈɑːtɪkl/

entertains

/ˌentəˈteɪnz/

Morning Reading

Grade 10 · Week 11

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Imagine you open a milk-tea shop. Some costs stay the same every month, such as the rent. These are **fixed costs**. Other costs rise when you sell more, such as milk and cups. These are **variable costs**. Add them together for the **total cost**. The money coming in from sales is your **revenue**. If a new shop opens across the street, that is **competition**, and you may have to lower your price.

Protect the shop's computer too. Use a strong **password**, and turn on **two-step verification**, so a thief needs your phone as well. A **firewall** checks the traffic between your computer and the internet. Some systems use **biometrics**, such as a fingerprint, to check who you are.

In the electricity lab, you measured **resistance** in **ohms**. A long thin wire resists the current more than a short thick one. A **variable resistor** lets you turn the current up and down, like a volume knob.

Talk about it :

1. List two fixed costs and two variable costs of a milk-tea shop.
2. Which is safer: one strong password, or two-step verification? Why?

Physics

Topic 4 · Electricity and magnetism

🔌 **electron**

/ɪˈlektɹən/

⚡ **charging by friction**

/ˈtʃɑːdʒɪŋ baɪ ˈfrɪkʃn/

🔌 **conductor**

/kənˈdʌktə/

🛡️ **insulator**

/ˈɪnsjuːleɪtə/

⊕ **coulomb**

/ˈkuːlɒm/

± **ion**

/ˈaɪɒn/

⚡ **ampere**

/ˈæmpeə/

🔌 **ammeter**

/ˈæmi:tə/

🔌 **free electrons**

/friː ɪˈlektɹɒnz/

🔌 **mains supply**

/meɪnz səˈplaɪ/

⚡ **power supply**

/ˈpaʊə səˈplaɪ/

⚡ **electrical power**

/ɪˈlektɹɪkl ˈpaʊə/

🔌 **electrical energy**

/ɪˈlektɹɪkl ˈenədʒi/

🔌 **volt**

/vɒlt/

⚡ **electromotive force**

/ɪˌlektɹəʊˈmæʊtɪv fɔːs/

 **circuit**

/ˈsɜːkɪt/

 **potential difference**

/pəˈtenʃl ˈdɪfrəns/

 **potential divider**

/pəˈtenʃl dɪˈvaɪdə/

 **voltmeter**

/ˈvɒltmɪːtə/

 **resistance**

/rɪˈzɪstəns/

 **total resistance**

/ˈtəʊtl rɪˈzɪstəns/

 **ohm**

/əʊm/

 **directly proportional**

/daɪˈrektli prəˈpɔːʃənl/

Chemistry

Topics 7–8 · Acids, bases and salts, The Periodic Table

 **filter**

/ˈfɪltə/

 **evaporate**

/ɪˈvæpəreɪt/

 **crystallise**

/ˈkrɪstəlaɪz/

 **precipitation**

/prɪˌsɪpɪˈteɪʃn/

 **water of crystallisation**

/ˈwɔːtə ɒv ˌkrɪstəlaɪˈzeɪʃn/

 **transition elements**

/trænˈsɪʃn ˈelɪmənts/

 **alkali metals**
/'ælkəlaɪ 'metlz/

 **lithium**
/'lɪθiəm/

 **sodium**
/'səʊdiəm/

 **potassium**
/pə'tæsiəm/

 **soft**
/sɒft/

 **trends**
/'trendz/

 **reactivity**
/rɪəktɪvɪti/

 **halogens**
/'hælədʒnz/

 **diatomic**
/ˌdaɪə'tɒmɪk/

 **halide**
/'hælaɪd/

 **displacement reaction**
/dɪ'spleɪsmənt rɪ'ækʃn/

 **coloured**
/'kɒləd/

Biology

Topics 11–14 · Gas exchange in humans, Respiration, Excretion in humans, Coordination and response

 **goblet cells**
/'gɒblət selz/

 **protein synthesis**
/'prəʊtiːn 'sɪnθəsis/

	nerve impulses <i>/nɜ:v 'ɪmpʌlsɪz/</i>			
	aerobic respiration <i>/eə'reʊbɪk ,respi'reɪʃn/</i>			
	anaerobic respiration <i>/,æneə'reʊbɪk ,respi'reɪʃn/</i>			
	alcohol <i>/'ælkəhɒl/</i>			
	lactic acid <i>/'læktɪk 'æsɪd/</i>			
	oxygen debt <i>/'ɒksɪdʒn det/</i>			
	kidneys <i>/'kɪdnɪz/</i>			
	urine <i>/'jʊərɪn/</i>			
	ureters <i>/'jʊəretəz/</i>			
	bladder <i>/'blædə/</i>			
	urethra <i>/jʊə'ri:θrə/</i>			
	dialysis <i>/daɪ'æləsɪs/</i>			
	renal cortex <i>/'ri:nl 'kɔ:teks/</i>			
	medulla <i>/'medʌlə/</i>			
	nephrons <i>/'nefrɒnz/</i>			
	filtration <i>/fɪl'treɪʃn/</i>			

 glomerulus /'glɒməɾjʊləs/			
 reabsorption /ri:b'sɔ:pʃn/			
 deamination /di:mi'neɪʃn/			
 toxic /'tɒksɪk/			
 coordinate /kəʊ'ɔ:dɪnət/			
 nervous system /'nɜ:vəs 'sɪstəm/			
 central nervous system /'sentrəl 'nɜ:vəs 'sɪstəm/			
 spinal cord /'spainl kɔ:d/			
 peripheral nervous system /pə'rɪfərəl 'nɜ:vəs 'sɪstəm/			
 regulates /'regjəleɪts/			
 sensory neurones /'sensəri 'nju:rəʊnz/			
 relay neurones /'ri:leɪ 'nju:rəʊnz/			
 motor neurones /'məʊtə 'nju:rəʊnz/			
 reflex /'ri:fleks/			
 response /rɪ'spɒns/			

 **stimulus**
/'stimjələs/

 **reflex arc**
/'ri:fleks a:k/

 **receptor**
/'ri:septə/

 **effector**
/'i:fektə/

Mathematics

Topic 4 · Geometry

 **regular polygon**
/'regjələ 'pɒlɪɡən/

 **pentagon**
/'pentægən/

 **hexagon**
/'heksægən/

 **octagon**
/'ɒktægən/

> interior angle
/'m'tɪəriə 'æŋɡl/

>> exterior angle
/'ek'stɪəriə 'æŋɡl/

 **line symmetry**
/'laɪn 'sɪmətri/

 **rotational symmetry**
/'rəʊ'teɪʃənəl 'sɪmətri/

 **plane of symmetry**
/'pleɪn ɒv 'sɪmətri/

— axis of symmetry
/'æksɪs ɒv 'sɪmətri/

○ circle /'sɜ:kəl/			
• centre /'sentə/			
↗ radius /'reɪdiəs/			
— diameter /daɪ'æmɪtə/			
⦶ circumference /sɜ:'kʌmfrəns/			
— chord /kɔ:d/			

Computer Science

Topics 5–6 · The internet and its uses, Automated and emerging technologies

🖨 proxy server /'prɒksi 'sɜ:və/			
⚙ automated system /'ɔ:təmeɪtɪd 'sɪstəm/			
🌐 environment /en'vaɪrənmənt/			
👤 human intervention /'hju:mən ɪntə'venʃn/			
🔥 central heating /'sentrəl 'hi:tɪŋ/			
🧪 chemical process /'kemɪkl 'prəuses/			
🌿 greenhouse /'gri:nhaʊs/			
— car park barrier /kɑ: pɑ:k 'bæriə/			

 **microprocessor**

/ˈmaɪkrəʊˈprəʊsesə/

 **stored values**

/stɔːd ˈvæljuːz/

 **agriculture**

/ˈæɡrɪkʌltʃə/

✓ **consistent**

/kənˈsɪstənt/

 **Robotics**

/rəʊˈbɒtɪks/

 **robots**

/ˈrəʊbɒts/

 **physical structure**

/ˈfɪzɪkl ˈstrʌktʃə/

 **mechanical**

/mɪˈkænɪkl/

 **electrical components**

/ɪˈlektrɪkl kəmˈpəʊnənts/

< > **programmable
instructions**

/ˈprəʊɡrəməbl mˈstrʌkʃnz/

 **factory equipment**

/ˈfæktəri ɪˈkwɪpmənt/

Economics

Topics 3–4 · Microeconomic decision-makers, Government and the macroeconomy

— average cost

/ˈævərɪdʒ kɒst/

📊 revenue

/ˈrevənjuː/

— average revenue

/ˈævərɪdʒ ˈrevənjuː/

🎯 objectives

/ɒbˈdʒektɪvz/

💓 survival

/səˈvaɪvl/

↗ growth

/grəʊθ/

⚔ competition

/ˌkɒmpəˈtɪʃn/

🚧 barriers to entry

/ˈbærɪəz tə ˈentri/

🌐 macroeconomy

/ˌmækroʊˈkɒnəmi/

👥 full employment

/fʊl emˈplɔɪmənt/

⚖ price stability

/praɪs stəˈbɪlɪti/

↗ inflation

/ɪnˈfleɪʃn/

⚖ balance of payments

/ˈbæləns ɒv ˈpeɪmənts/

↕ redistribution of income

/ˌriːˌdɪstrɪˈbjʊːʃn ɒv ˈɪŋkəm/

English

Topics 6–7 · Writing an article, Writing a review

✦ **engage**
/en'geɪdʒ/

H **title**
/'taɪtl/

% **interest**
/'ɪntrest/

¶ **introduction**
/ˌɪntrə'dʌkʃn/

✂ **varied**
/'veəriəd/

☆ **review**
/rɪ'vjuː/

👁 **describes**
/dɪ'skraɪbz/

Morning Reading

Grade 10 · Week 12

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

In a modern car factory, **robots** do the heavy work. A robot has a **mechanical** arm, sensors, and a **microprocessor** that follows **programmable instructions**. Robots weld the same joint perfectly, thousands of times, without getting tired. At home, smaller machines help too: a robot **vacuum cleaner** finds its own way around your floor. These are **domestic appliances** with tiny computers inside.

Electric circuits this week: in a **series** circuit, the same current flows through every part, and one broken bulb switches off the whole string of lights. In a **parallel** circuit, each bulb has its own path, so the others stay on. A **fuse** is a thin wire that melts if the current gets dangerously large, protecting the circuit.

When prices in a country keep rising year after year, we call it **inflation**. A government can respond with **fiscal policy**: changing **taxation** and **government spending** through its yearly **budget**.

Talk about it :

1. Which jobs in your city are now done by robots? Which jobs are safe, and why?
2. Your holiday lights use a series circuit. Why is that a bad design?

Physics

Topics 2-4 · Thermal physics, Electricity and magnetism

 **inversely proportional**

/ɪn'vɜːsli prə'pɔːʃənəl/

 **cross-sectional area**

/krɒs 'sekʃənəl 'eəriə/

 **resistor**

/rɪ'zɪstə/

 **variable resistor**

/'veəriəbl rɪ'zɪstə/

 **light-dependent resistor**

/laɪt dɪ'pendənt rɪ'zɪstə/

 **light-emitting diode**

/laɪt ɪ'mɪtɪŋ 'daɪəd/

 **diode**

/'daɪəd/

 **filament lamp**

/'fɪləmənt læmp/

 **kilowatt-hour**

/'kɪləwɒt 'aʊə/

 **appliance**

/ə'plaɪəns/

 **heater**

/'hiːtə/

 **cell**

/sel/

 **battery**

/'bætəri/

 **switch**

/swɪtʃ/

 trip switch /ˈtrɪp swɪtʃ/			
 fuse /fjuːz/			
 fuse rating /fjuːz ˈreɪtɪŋ/			
 thermistor /ˈθɜːmɪstə/			
 relay /ˈriːleɪ/			
 motor /ˈməʊtə/			
 d.c. motor /ˌdiː ˈsiː ˈməʊtə/			
 bell /bel/			
 transformer /ˈtrænsˈfɔːmə/			

Chemistry

Topics 4–9 · Electrochemistry, The Periodic Table, Metals

 variable /ˈveəriəbl/			
 unreactive /ʌnrɪˈæktɪv/			
 monatomic /ˌmɒnəˈtɒmɪk/			
 thermal conductivity /ˈθɜːml kɒndəktɪvɪti/			
 brittle /ˈbrɪtl/			
 steam /stiːm/			

 **oxide layer**
/'ɒksaɪd 'leɪə/

 **calcium oxide**
/'kælsɪəm 'ɒksaɪd/

 **calcium**
/'kælsɪəm/

 **alloy**
/'æləɪ/

 **brass**
/bræs/

 **zinc**
/zɪŋk/

 **stainless steel**
/'steɪnləs sti:l/

 **chromium**
/'krəʊmiəm/

 **nickel**
/'nɪkl/

 **carbon**
/'kɑ:bən/

 **carbon monoxide**
/'kɑ:bən mʌ'nɒksaɪd/

 **reactivity series**
/rɪæk'tɪvɪti 'sɪəri:z/

 **hydrogen**
/'haɪdrədʒɪn/

Biology

Topic 14 · Coordination and response

 **gland**
/glænd/

 **synapse**
/'sɪnæps/

 vesicles <i>/ˈvesɪklz/</i>			
 neurotransmitter <i>/ˈnjuːrətrænsmitə/</i>			
 synaptic gap <i>/sɪˈnæptɪk ɡæp/</i>			
 receptor proteins <i>/rɪˈseptə ˈprəʊtiːnz/</i>			
 sense organs <i>/sens ˈɔːɡənz/</i>			
 cornea <i>/ˈkɔːniə/</i>			
 refracts <i>/rɪˈfræktz/</i>			
 iris <i>/ˈaɪrɪs/</i>			
 pupil <i>/ˈpjuːpl/</i>			
 lens <i>/lenz/</i>			
 retina <i>/ˈretɪnə/</i>			
 optic nerve <i>/ˈɒptɪk nɜːv/</i>			
 blind spot <i>/blaɪnd spɒt/</i>			
 antagonistic <i>/ænˈtæɡənɪstɪk/</i>			
 circular muscles <i>/ˈsɜːkjələ ˈmʌslz/</i>			
 radial muscles <i>/ˈreɪdiəl ˈmʌslz/</i>			

 accommodation <i>/əˌkɒməˈdeɪʃn/</i>			
 ciliary muscles <i>/'sɪliəri 'mʌslz/</i>			
 suspensory ligaments <i>/sə'spensəri 'lɪgəmənts/</i>			
 rods <i>/rɒdz/</i>			
 vision <i>/'vɪʒn/</i>			
 cones <i>/kəʊnz/</i>			
 fovea <i>/'fəʊviə/</i>			
 target organs <i>/'tɑːɡɪt 'ɔːɡənz/</i>			
 endocrine glands <i>/'endəʊkraɪn glændz/</i>			
 adrenal glands <i>/ə'driːnl glændz/</i>			
 adrenaline <i>/ə'drenəlɪn/</i>			
 insulin <i>/'ɪnsjuːlɪn/</i>			
 glucagon <i>/'gluːkæɡən/</i>			
 testes <i>/'testiːz/</i>			
 testosterone <i>/te'stɒstərəʊn/</i>			
 ovaries <i>/'əʊvəriːz/</i>			

 **oestrogen**
/'i:stɹədʒn/

Mathematics

Topic 4 · Geometry

 **arc**
/ɑ:k/

 **sector**
/'sektə/

 **segment**
/'segmənt/

 **semicircle**
/'semɪsɜ:kl/

 **cyclic quadrilateral**
/'saɪklɪk ,kwɒdrɪ'lætərəl/

 **alternate segment theorem**
/ɔ:l'tɜ:nət 'segmənt 'θiərəm/

 **similar**
/'sɪmlə/

 **scale factor**
/skeɪl 'fæktə/

= congruent
/'kɒŋgru:ənt/

 **bearing**
/'beərɪŋ/

 **clockwise**
/'klɒkwaɪz/

 **construct**
/'kɒnstrəkt/

 **compasses**
/'kæmpəsɪz/

 **net**
/net/

 **scale drawing**

/skeɪl 'drɔːɪŋ/

 **solids**

/'sɒlɪdz/

Computer Science

Topics 6–7 · Automated and emerging technologies

 **domestic appliances**

/də'mestɪk ə'plaɪənsɪz/

 **vacuum cleaner**

/'vækjuːm 'kliːnə/

 **lack of independent
decision-making**

/læk ɒv ˌɪndɪ'pendənt dɪ'sɪʒn 'meɪkɪŋ/

 **Artificial intelligence**

/ˌɑːtɪ'fɪʃl ɪn'telɪdʒəns/

 **simulation**

/ˌsɪmjʊ'leɪʃn/

 **rules**

/ruːlz/

 **reason**

/'riːzn/

 **draw conclusions**

/drɔː kən'kluːʒnz/

 **approximate**

/ə'prɒksɪmət/

 **definite**

/'defɪnət/

 **learn**

/lɜːn/

 adapt /ə'dæpt/			
 expert systems /'ekspɜ:t 'sɪstəmz/			
 natural language processing /'nætʃərəl 'læŋɡwɪdʒ 'prəʊsesɪŋ/			
 self-driving cars /self 'draɪvɪŋ kɑ:z/			
 narrow AI /'nærəʊ ,eɪ 'aɪ/			
 general AI /'dʒenərəl ,eɪ 'aɪ/			
 strong AI /'strɒŋ ,eɪ 'aɪ/			
 program development life cycle /'prəʊɡræm dɪ'veləpmənt laɪf 'saɪkl/			
 analysis /ə'næləsis/			

Economics

Topic 4 · Government and the macroeconomy

 conflict /'kɒnflɪkt/			
 Fiscal policy /'fɪskl 'pɒləsi/			
 government spending /'ɡʌvənmənt 'spendɪŋ/			
 taxation /tæk'seɪʃn/			
 budget /'bʌdʒɪt/			

↘ **budget deficit**

/ˈbʌdʒɪt ˈdefɪsɪt/

↗ **budget surplus**

/ˈbʌdʒɪt ˈsɜːpləs/

💰 **direct tax**

/daɪˈrekt tæks/

↗ **progressive tax**

/prəˈɡresɪv tæks/

↘ **regressive tax**

/rɪˈɡresɪv tæks/

= **proportional tax**

/prəˈpɔːʃənl tæks/

🏛️ **Monetary policy**

/ˈmʌnɪtəri ˈpɒləsi/

🏛️ **money supply**

/ˈmʌni səˈplaɪ/

↗ **invest**

/ɪnˈvest/

English

Topics 7–8 · Writing a review, Writing an essay

⚖️ **evaluate**

/ɪˈvæljuːeɪt/

📄 **essay**

/ˈeseɪ/

🗨️ **discursive**

/dɪˈskɜːsɪv/

⚖️ **argumentative**

/ˌɑːɡjuːˈmentətɪv/

≡ **body**

/ˈbɒdi/

Morning Reading

Grade 10 · Week 13

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Where does electricity come from? In a power station, a huge **coil** of wire spins inside a magnetic field. Moving a wire through a magnetic field creates a current. This is **electromagnetic induction**, and the machine is called an **a.c. generator**. Wind turbines, coal plants and dams all work this same way: something spins the coil, and electricity flows out.

Machines are also learning to think. **Expert systems** ask questions and give advice, like a doctor's assistant. **Self-driving cars** read the road with cameras and sensors. Today's systems are **narrow AI**: each one is clever at a single task, but it cannot do anything else.

How do we know if a country is doing well? Economists add up the value of everything it makes in a year: the **gross domestic product**. The economy moves in a **business cycle**: a **boom** with many jobs, then sometimes a **recession** when spending falls, and later a **recovery**. The central bank uses **monetary policy**, mainly the interest rate, to steady the ride.

Talk about it :

1. Trace the energy: how does a windy day become the light in your room?
2. Would you trust a self-driving taxi today? Give one reason for and one against.

Physics

Topic 4 · Electricity and magnetism

 **series**

/ˈsiəri:z/

= parallel

/ˈpærəlel/

 **junction**

/ˈdʒʌŋkʃn/

 **hazard**

/ˈhæzəd/

 **insulation**

/ˌɪnsjuːˈleɪʃn/

 **overheating**

/ˌəʊvəˈhi:tɪŋ/

 **damp**

/dæmp/

 **overloading**

/ˌəʊvəˈləʊdɪŋ/

 **socket**

/ˈsɒkɪt/

 **live wire**

/laɪv ˈwaɪə/

— neutral wire

/ˈnju:trəl ˈwaɪə/

 **earth wire**

/ɜ:θ ˈwaɪə/

 **casing**

/ˈkeɪsɪŋ/

 **earthed**

/ɜ:θt/

 **double-insulated**

/ˈdʌbl ˈɪnsjuːleɪtɪd/

 **solenoid**

/ˈsəʊlənɔɪd/

 **coil**

/kɔɪl/

 **primary coil**

/ˈpraɪməri kɔɪl/

 **secondary coil**

/ˈsekəndəri kɔɪl/

 **loudspeaker**

/ˈlaʊdspɪ:kə/

 **electromagnetic induction**

/ɪˌlektərəmægˈnetɪk ɪnˈdʌkʃn/

 **a.c. generator**

/ˌeɪ ˈsiː ˈdʒenəreɪtə/

Chemistry

Topics 4–10 · Electrochemistry, Metals, Chemistry of the environment

 **lead**

/liːd/

 **aluminium**

/ˌæljʊˈmɪniəm/

 **magnesium**

/mægˈniːziəm/

 **rusting**

/ˈrʌstɪŋ/

 **rust**

/rʌst/

 **barrier methods**

/ˈbæriə ˈmeθədz/

 **galvanising**

/ˈgælvənaɪzɪŋ/

 **sacrificial protection**

/ˌsækrɪ'fɪʃl prə'tekʃn/

 **ore**

/ɔː/

 **hematite**

/'hemətait/

 **blast furnace**

/blæst 'fɜːnɪs/

 **limestone**

/'laɪmstəʊn/

 **slag**

/slæg/

 **bauxite**

/'bɔːksaɪt/

 **cryolite**

/'kraɪələɪt/

 **distilled water**

/dɪ'stɪld 'wɔːtə/

 **impurities**

/ɪm'pjʊərɪtiz/

 **sewage**

/'suːɪdʒ/

 **microbes**

/'maɪkrəʊbz/

 **phosphates**

/'fɒsfeɪts/

 **aquatic life**

/ə'kwætɪk laɪf/

 **minerals**

/'mɪnərəlz/

Biology

Topics 14–16 · Coordination and response, Drugs, Reproduction

 **duration**

/dʒʊə'reɪʃn/

 **homeostasis**

/ˌhəʊmi:ə'stɑ:sɪz/

 **negative feedback**

/ˈnegətɪv ˈfi:dbæk/

 **set point**

/set pɔɪnt/

 **diabetes**

/ˌdaɪəˈbi:tɪz/

 **sweat glands**

/swet glændz/

 **sweating**

/ˈswetɪŋ/

 **hair erector muscles**

/heə ɪ'rektə 'mʌslz/

 **fatty tissue**

/ˈfæti ˈtɪʃu:/

 **insulation**

/ˌɪnsjuːˈleɪʃn/

 **arterioles**

/ɑːˈtɪəriəʊlz/

 **vasodilation**

/ˌvæsədiˈleɪʃn/

 **shiver**

/ˈʃɪvə/

 **vasoconstriction**

/ˌvæsəkən'strɪkʃn/

 **tropism**

/ˈtrəʊpɪzəm/

↓ gravitropism /'grævitrəʊpɪzəm/			
↓ gravity /'grævɪti/			
☀️ phototropism /ˌfəʊtəʊ'trəʊpɪzəm/			
🌱 auxin /'ɔːksɪn/			
🌱 shoot /ʃuːt/			
↕ elongate /'iːlɒŋgeɪt/			
💊 drug /drʌɡ/			
💊 antibiotics /ˌæntɪbaɪ'ɒtɪks/			
🦠 infections /ɪn'fekʃnz/			
🛡️ resistant /rɪ'zɪstənt/			
📄 asexual reproduction /eɪ'sekʃuːəl rɪprə'dʌkʃn/			
👤 parent /'peərənt/			
😊 offspring /'ɒfsprɪŋ/			
♂️ sexual reproduction /'sekʃuːəl rɪprə'dʌkʃn/			
👤 fusion /'fjuːʒn/			
⊕ zygote /'zaɪɡəʊt/			

 **fertilisation**
/ˈfɜːtɪlaɪˈzeɪʃn/

 **variation**
/ˌveəriˈeɪʃn/

 **haploid**
/ˈhæplɔɪd/

 **chromosomes**
/ˈkrəʊməsəʊmz/

Mathematics

Topics 4–5 · Geometry, Mensuration

 **cube**
/kjuːb/

 **cuboid**
/ˈkjuːbɔɪd/

 **prism**
/ˈprɪzəm/

 **cylinder**
/ˈsɪlɪndə/

 **pyramid**
/ˈpɪrəˌmɪd/

 **cone**
/kəʊn/

 **sphere**
/sfɪə/

 **hemisphere**
/ˈhemɪsfɪə/

 **frustum**
/ˈfrʌstəm/

 **face**
/feɪs/

 **edge**
/edʒ/

 surface /'sɜːfɪs/			
 metric /'metrɪk/			
 capacity /'kæ'pæsɪti/			
 perimeter /'pə'rɪmɪtə/			
 height /haɪt/			

Computer Science

Topic 7

 design /'diːzaɪn/			
 coding /'kəʊdɪŋ/			
 testing /'testɪŋ/			
 abstraction /'æb'strækʃn/			
 decomposition /ˌdiːkɒmpə'zɪʃn/			
 sub-systems /'sʌb 'sɪstəmz/			
 structure diagram /'strʌktʃə 'daɪəgræm/			
 iterative testing /'ɪtərətɪv 'testɪŋ/			
 test data /test 'deɪtə/			
 flowchart /'fləʊtʃɑːt/			

 **pseudocode**
/'su:dəʊkəʊd/

 **algorithm**
/'ælgərɪθəm/

 **input**
/'ɪnpʊt/

 **processing**
/'prəʊsesɪŋ/

 **output**
/'aʊtpʊt/

 **validation**
/ˌvælɪ'deɪʃn/

 **range check**
/reɪndʒ tʃek/

 **length check**
/leŋθ tʃek/

 **type check**
/taɪp tʃek/

 **presence check**
/'prezəns tʃek/

Economics

Topic 4 · Government and the macroeconomy

 **Supply-side policy**
/sə'plaɪ saɪd 'pɒlsɪ/

 **privatisation**
/ˌpraɪvətəɪ'zeɪʃn/

 **deregulation**
/dɪˌregjʊ'leɪʃn/

 **gross domestic product**
/grəʊs də'mestɪk 'prɒdʌkt/

 Real /rɪəl/			
 business cycle /'biznəs 'saɪkl/			
 boom /bu:m/			
 recession /rɪ'seʃn/			
 slump /slʌmp/			
 recovery /rɪ'kʌvəri/			
 living standards /'lɪvɪŋ 'stændədz/			
 claimant count /'kleɪmənt kaʊnt/			
 unemployment benefit /ʌnem'plɔɪmənt 'benɪfɪt/			

English

Topic 9 · Listening skills

 recording /rɪ'kɔ:dɪŋ/			
 specific /spə'sɪfɪk/			
 directions /daɪ'rekʃnz/			
 feelings /'fi:lɪŋz/			
 connect /kə'nekt/			

↗ **suggests**
/sə'dʒests/

Morning Reading

Grade 10 · Week 14

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

A recipe is a plan: first wash the rice, then add water, then cook. Computer scientists call such a plan an **algorithm**: a list of steps that turns **input** into **output**. You can write it as **pseudocode**, simple English-like lines, or draw it as a **flowchart** with boxes and arrows. Good programs also check their input. **Validation** stops silly answers: a **range check** rejects an age of 200, and a **presence check** makes sure the box is not empty.

Deep inside every atom is a tiny **nucleus** made of **protons** and **neutrons**. Atoms of the same element always have the same number of protons, but the number of neutrons can differ. Such atoms are called **isotopes**.

Not all joblessness is the same. **Frictional unemployment** is short: a worker is between jobs. **Structural unemployment** is deeper: the industry itself has changed, and old skills no longer fit. When the whole economy slows down, **cyclical unemployment** rises everywhere.

Talk about it :

1. Write a four-step algorithm for making your breakfast.
2. A robot factory replaces 100 workers. What kind of unemployment is this? What could help the workers?

Physics

Topics 4–5 · Electricity and magnetism, Nuclear physics

 **slip rings**

/slɪp rɪŋz/

 **brushes**

/'brʌʃɪz/

 **deflect**

/dɪ'flekt/

 **turning effect**

/'tɜːnɪŋ ɪ'fekt/

 **split-ring commutator**

/splɪt rɪŋ 'kɒmjʊːtətə/

 **step-up**

/step ʌp/

 **step-down**

/step daʊn/

 **high-voltage transmission**

/haɪ 'vɔʊltɪdʒ træns'mɪʃn/

 **atom**

/'ætəm/

 **orbit**

/'ɔːbɪt/

 **charge**

/tʃɑːdʒ/

 **alpha particle α**

/'ælfə 'pɑːtɪkl/

 **beta particle β**

/'bi:tə 'pɑːtɪkl/

 **gold foil**

/gəʊld fɔɪl/

 **scattering**

/'skætərɪŋ/

⊙	nucleon /'nju:klɪən/			
⊙	nucleus /'nju:klɪəs/			
Σ	nucleon number /'nju:klɪən 'nʌmbə/			
#	proton number /'prəʊtɒn 'nʌmbə/			
+	proton /'prəʊtɒn/			
⚖	relative /'relatɪv/			
○	neutron /'nju:trɒn/			

Chemistry

Topic 10 · Chemistry of the environment

☠	toxic /'tɒksɪk/			
⇌	deoxygenation /diːˌɒksɪdʒə'neɪʃn/			
📦	sedimentation /ˌsedɪmən'teɪʃn/			
🌊	filtration /fɪl'treɪʃn/			
💧	chlorination /ˌklɔːrɪ'neɪʃn/			
🌱	fertilisers /'fɜːtəlaɪzəz/			
☁	oxides of nitrogen /'ɒksaɪdz ɒv 'naɪtrədʒɪn/			
🔥	phosphorus /'fɒsfɔːrəs/			

 **greenhouse gases**

/ˈɡriːnhaʊs ˈɡæsɪz/

 **complete combustion**

/kəmˈpliːt kəmˈbʌstʃn/

 **incomplete combustion**

/ɪnkəmˈpliːt kəmˈbʌstʃn/

 **particulates**

/pɑːˈtɪkjʊleɪts/

 **fossil fuels**

/ˈfɒsl ˈfjuːəlz/

 **global warming**

/ˈɡləʊbl ˈwɔːmɪŋ/

 **climate change**

/ˈklaɪmət tʃeɪndʒ/

 **respiratory**

/rɪˈspɪrətəri/

 **acid rain**

/ˈæsɪd reɪn/

 **photochemical smog**

/ˌfəʊtəʊˈkemɪkl smɒɡ/

 **renewable energy**

/rɪˈnjuːəbl ˈenədʒi/

 **catalytic converters**

/ˌkætəˈlɪtɪk kənˈvɜːtəz/

 **flue gas desulfurisation**

/fluː ɡæs diːˌsʌlfjʊərəɪˈzeɪʃn/

 **chlorophyll**

/ˌklɒːrəʊˈfɪl/

Biology

Topic 16 · Reproduction

⊙ **diploid**

/ˈdɪplɔɪd/

🍃 **sepals**

/ˈseɪplz/

🌸 **petals**

/ˈpetlz/

🌸 **stamens**

/ˈsteɪmənz/

🧵 **filament**

/ˈfɪləmənt/

⊙ **anther**

/ˈænthə/

🌾 **pollen grains**

/ˈpɒlən greɪnz/

🌸 **carpel**

/ˈkɑːpl/

⊙ **stigma**

/ˈstɪgmə/

♂ **style**

/stɑɪl/

○ **ovary**

/ˈəʊvəri/

○ **ovules**

/ˈɒvjʊːlz/

↔ **self-pollination**

/self ˌpɒlɪˈneɪʃn/

↔ **cross-pollination**

/krɒs ˌpɒlɪˈneɪʃn/

🐝 **pollinators**

/ˈpɒlɪneɪtəz/

 **pollen tube**
/'pɒlən tju:b/

 **germinate**
/'dʒɜːmineɪt/

 **scrotum**
/'skrɒtəm/

 **sperm ducts**
/spɜːm dʌkts/

 **prostate gland**
/'prɒsteɪt glænd/

 **penis**
/'piːnɪs/

 **oviducts**
/'əʊvɪdʌkts/

 **uterus**
/'juːtərəs/

 **cervix**
/'sɜːvɪks/

 **vagina**
/və'dʒaɪnə/

 **flagellum**
/flə'dʒeləm/

 **acrosome**
/'ækroʊsəʊm/

 **jelly coat**
/'dʒeli kəʊt/

 **embryo**
/'embriəʊ/

 **implants**
/'implænts/

 **fetus**
/'fi:təs/

 **umbilical cord**
/ʌm'bɪlɪkl kɔːd/

○	amniotic sac /ˌæmniˈɒtɪk sæk/			
💧	amniotic fluid /ˌæmniˈɒtɪk ˈfluːɪd/			
↗	puberty /ˈpjʊːbəti/			

Mathematics

Topics 5–6 · Mensuration, Trigonometry

⌒	minor sector /ˈmaɪnə ˈsektə/			
⌒	major sector /ˈmeɪdʒə ˈsektə/			
↷	arc length /ɑːk leŋθ/			
□	surface area /ˈsɜːfɪs ˈeəriə/			
✂	cross-section /krɒs ˈsekʃn/			
📦	curved surface area /kɜːvd ˈsɜːfɪs ˈeəriə/			
△	slant height /slænt haɪt/			
⊞	compound shape /ˈkɒmpaʊnd ʃeɪp/			
△	right-angled triangle /raɪt ˈæŋɡld ˈtraɪæŋɡl/			
↗	hypotenuse /haɪˈpɒtənjuːs/			
↑	opposite /ˈɒpəzɪt/			

→ adjacent /ə'dʒeɪsənt/			
∧ sine /saɪn/			
∧ cosine /'kəʊsaɪn/			
↗ tangent ratio /'tændʒənt 'reɪʃiəʊ/			
↗ angle of elevation /'æŋɡl ɒv ,eli'veɪʃn/			

Computer Science

Topics 7–8 · Programming

≡ format check /'fɔ:mæt tʃek/			
☑ verification /,veri'fɪ'keɪʃn/			
👁 visual check /'vɪʒu:əl tʃek/			
📄 double entry /'dʌbl 'entri/			
📊 trace table /treɪs 'teɪbl/			
+ normal /'nɔ:ml/			
⚠ abnormal /əb'nɔ:ml/			
🔥 extreme /ek'stri:m/			
[] boundary /'baʊndəri/			
🔍 linear search /'liːniə sɜ:tʃ/			

↕ **bubble sort**

/ˈbʌbl sɔ:t/

Σ **totalling**

/ˈtəʊtəlɪŋ/

counting

/ˈkaʊntɪŋ/

^ **maximum**

/ˈmæksɪmə/

✓ **minimum**

/ˈmɪnɪmə/

— **average**

/ˈævərɪdʒ/

(x) **variable**

/ˈveəriəbl/

🔒 **constant**

/ˈkɒnstənt/

📢 **declare**

/dɪˈkleə/

🏷️ **data type**

/ˈdeɪtə taɪp/

Economics

Topics 4–5 · Government and the macroeconomy, Economic development

📋 **labour force survey**

/ˈleɪbə fɔ:s ˈsɜ:veɪ/

👥 **labour force**

/ˈleɪbə fɔ:s/

↔ **frictional unemployment**

/ˈfrɪkʃənəl ənemˈplɔɪmənt/

🏢 **structural unemployment**

/ˈstrʌktʃərəl ənemˈplɔɪmənt/

 cyclical unemployment			
/ˈsaɪklɪkl ʌnemˈplɔɪmənt/			
 deflation			
/diːˈfleɪʃn/			
 Consumer Prices Index			
/kənˈsuːmə ˈpraɪsɪz ˈɪndeks/			
 weight			
/weɪt/			
 demand-pull			
/dɪˈmænd pʊl/			
 cost-push			
/kɒst pʊʃ/			
 purchasing power			
/ˈpɜːtʃɪsɪŋ ˈpaʊə/			
 indicator			
/ˈɪndɪkeɪtə/			
 per head			
/pɜː hed/			
 Human Development Index			
/ˈhjuːmən dɪˈveləpmənt ˈɪndeks/			

English

Topics 9–10 · Listening skills, Speaking skills

 distractors			
/dɪˈstræktəz/			
 conversation			
/kɒnvəˈseɪʃn/			
 respond			
/rɪˈspɒnd/			
 turns			
/tɜːnz/			

□ □ **develop**

/dɪˈveləp/

🔊 **pronunciation**

/prəˌnʌnsiˈeɪʃn/

Morning Reading

Grade 10 · Week 15

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Is a country rich if it has money? Not only that. The **Human Development Index** measures three things together: income per person, education, and **life expectancy**, how long people live. A country can grow richer while some people stay poor. **Absolute poverty** means a family cannot afford basic food and shelter. **Relative poverty** means they have far less than others around them. One tool against low pay is a **minimum wage**.

In physics, you learned that some rocks and even the air are slightly **radioactive**. A detector clicks even with no sample nearby; this is **background radiation**, coming from space and from the ground. Radioactive **decay** is **random**: no one can say which atom will break next, only how many will decay on average.

How does a computer find one name in a list of millions? A **linear search** checks each item, one by one. To put a list in order, a **bubble sort** swaps neighbours again and again until the list is sorted.

Talk about it :

1. Which matters more for a good life: income, education, or health? Discuss.
2. How would you find one card in a shuffled deck? Compare your method with a linear search.

Physics

Topics 1–5 · Motion, forces and energy, Nuclear physics

☒ **nuclide**

/ˈnjuːklaɪd/

🔗 **isotope**

/ˈaɪsətəʊp/

↗ **nuclear fission**

/ˈnjuːklɪə ˈfɪʃn/

↗ **nuclear fusion**

/ˈnjuːklɪə ˈfjuːʒn/

☒ **hydrogen**

/ˈhaɪdrədʒn/

☒ **helium**

/ˈhiːliəm/

⚠ **unstable**

/ʌnˈsteɪbl/

🔊 **radiation**

/ˌreɪdɪˈeɪʃn/

🔊 **background radiation**

/ˈbækgraʊnd ˌreɪdɪˈeɪʃn/

🔊 **gamma radiation γ**

/ˈgæmə ˌreɪdɪˈeɪʃn/

🔊 **radioactive**

/ˌreɪdɪəʊˈæktɪv/

↘ **decay**

/dɪˈkeɪ/

✳ **spontaneous**

/spɒnˈteɪniəs/

✂ **random**

/ˈrændəm/

☒ **radon**

/ˈreɪdɒn/

 **cosmic rays**
/'kɒzmɪk reɪz/

 **detector**
/dɪ'tektə/

 **counter**
/'kaʊntə/

 **count rate**
/kaʊnt reɪt/

 **corrected**
/kə'rektɪd/

 **ionising**
/'aɪənaɪzɪŋ/

 **aluminium**
/ˌæljʊ'mɪniəm/

Chemistry

Topics 10–11 · Chemistry of the environment, Organic chemistry

 **photosynthesis**
/ˌfəʊtəʊ'sɪnθəʃɪs/

 **yeast**
/ji:st/

 **glucose**
/'glu:kəʊs/

 **displayed formula**
/dɪ'spleɪd 'fɔ:mjələ/

 **structural formula**
/'strʌktʃərəl 'fɔ:mjələ/

 **general formula**
/'dʒenərəl 'fɔ:mjələ/

 **Structural isomers**
/'strʌktʃərəl 'aɪsəməz/

 **homologous series**

/hə'mɒləgəs 'sɪəri:z/

 **functional group**

/'fʌŋkʃənəl gru:p/

 **saturated**

/'sætʃəreɪtɪd/

 **unsaturated**

/ʌn'sætʃəreɪtɪd/

 **coal**

/kəʊl/

 **natural gas**

/'nætʃərəl gæs/

 **petroleum**

/pə'trəʊli:əm/

 **hydrocarbon**

/'haɪdrəka:bən/

 **fractions**

/'frækʃnz/

 **fractional distillation**

/'frækʃənəl dɪstɪ'leɪʃn/

 **fractionating column**

/'frækʃənətɪŋ 'kɒləm/

 **chain length**

/tʃeɪn leŋθ/

 **volatility**

/ˌvɒlə'tɪlɪti/

 **viscosity**

/vɪ'skɒsɪti/

Biology

Topics 16–17 · Reproduction, Inheritance

♀ secondary sexual characteristics

/ˈsekəndəri ˈsekʃuəl ˌkærɪktəˈrɪstɪks/

↺ menstrual cycle

/ˈmenstruəl ˈsaɪkl/

○ ovulation

/ˌɒvjʊˈleɪʃn/

⌘ progesterone

/prəʊˈdʒestərən/

😊 pregnancy

/ˈpregnənsi/

🦠 sexually transmitted infection

/ˈsekʃu:əli trænˈsmɪtɪd ɪnˈfekʃn/

01 codes

/kəʊdɪz/

↗ allele

/əˈli:l/

♂ sex chromosomes

/seks ˈkrəʊməsəʊmz/

÷ ratio

/ˈreɪʃiəʊ/

🗣 expresses

/ekˈspresɪz/

✉ messenger

/ˈmesɪndʒə/

📄 mitosis

/maɪˈtəʊsɪs/

📄 replication

/ˌreplɪˈkeɪʃn/

⊙	daughter cell <i>/ˈdɔ:tə sel/</i>			
🌱	stem cells <i>/stem selz/</i>			
↗️	meiosis <i>/meiˈəʊsis/</i>			
📺	inheritance <i>/ɪnˈherɪtəns/</i>			
🧬	genotype <i>/ˈdʒenətaɪp/</i>			
👁️	phenotype <i>/ˈfenətaɪp/</i>			
↑	dominant <i>/ˈdɒmɪnənt/</i>			
↓	recessive <i>/rɪˈsesɪv/</i>			
=	homozygous <i>/ˌhɒməˈzɪɡəs/</i>			
💎	pure-breeding <i>/pjʊə ˈbriːdɪŋ/</i>			
±	heterozygous <i>/ˌhetrəˈzɪɡəs/</i>			
×	cross <i>/krɒs/</i>			
⌘	Punnett square <i>/ˈpʌnɪt skweə/</i>			
👤	pedigree diagram <i>/ˈpedɪɡriː ˈdaɪəɡræm/</i>			
×	test cross <i>/test krɒs/</i>			
↔️	codominance <i>/ˈkəʊdɒmɪnəns/</i>			
🩸	blood groups <i>/blʌd gruːps/</i>			

♂ sex-linked

/seks lɪŋkt/

Mathematics

Topics 6–7 · Trigonometry, Transformations and vectors

↘ angle of depression

/ˈæŋɡl ɒv dɪˈpreʃn/

∧ trigonometric equation

/ˌtrɪɡənəʊˈmetrɪk ɪˈkweɪʃn/

∧ sine rule

/saɪn ruːl/

∧ cosine rule

/ˈkəʊsaɪn ruːl/

⊕ ambiguous case

/æmˈbɪɡjuːəs keɪs/

□ plane

/pleɪn/

⏏ transformation

/trænsfɔːˈmeɪʃn/

[:] reflection

/rɪˈflekʃn/

— mirror line

/ˈmɪrə laɪn/

↻ rotation

/rəʊˈteɪʃn/

[] enlargement

/enˈlɑːdʒmənt/

↕ translation

/trænˈsleɪʃn/

↗ vector

/ˈvektə/

↕ column vector

/ˈkɒləm ˈvektə/

scalar

/ˈskeɪlə/

→ directed line segment

/daɪ'rektɪd laɪn 'segmənt/

Computer Science

Topic 8 · Programming

± integer

/ˈɪntɪdʒə/

⊙ real

/rɪəl/

T char

/tʃɑː/

〰 string

/strɪŋ/

⊙ Boolean

/ˈbuːliən/

≡ sequence

/ˈsiːkwəns/

∞ selection

/sɪˈlekʃn/

↺ iteration

/ˌɪtə'reɪʃn/

↻ loop

/luːp/

↺ count-controlled loop

/kaʊnt kən'trəʊld luːp/

↑ pre-condition loop

/priː kən'dɪʃn luːp/

↓ post-condition loop

/pəʊst kən'dɪʃn luːp/

% remainder

/rɪ'meɪndə/

>≡ nested statement

/'nestɪd 'steɪtmənt/

✂ substring

/'sʌbstɹɪŋ/

↑ upper case

/'ʌpə keɪs/

↓ lower case

/'ləʊə keɪs/

↔ length

/leŋθ/

☐ procedure

/prə'sɪ:dʒə/

☐ function

/'fʌŋkʃn/

Economics

Topic 5 · Economic development

♥ life expectancy

/laɪf ek'spektənsi/

↗ income distribution

/'ɪŋkʌm ,dɪstrɪ'bju:ʃn/

☹ poverty

/'pɒvəti/

☹ absolute poverty

/'æbsəlu:t 'pɒvəti/

⚖ relative poverty

/'relatɪv 'pɒvəti/

↗ redistribute

/,rɪ:'dɪstrɪbju:t/

	minimum wage /'mɪnɪmə wɛɪdʒ/			
	benefits /'benɪfɪts/			
	birth rate /bɜːθ reɪt/			
	death rate /deθ reɪt/			
	migration /maɪ'greɪʃn/			
	immigration /ɪmɪ'greɪʃn/			
	emigration /ɛmɪ'greɪʃn/			
	net migration /net maɪ'greɪʃn/			

English

Topics 10–11 · Speaking skills, Vocabulary and text types

	intonation /ɪntə'neɪʃn/			
	paraphrasing /'pærəfreɪzɪŋ/			
	collocations /ˌkɒləʊ'keɪʃnz/			
	set phrases /set 'freɪzɪz/			
	phrasal verbs /'freɪzl vɜːbz/			
	fluent /'fluːənt/			

Morning Reading

Grade 10 · Week 16

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Why is January cold and July hot? The Earth's **axis** is **tilted**. As the Earth travels around the **Sun**, our half of the planet sometimes leans towards the Sun and sometimes away. That gives us the **seasons**. The Earth also **rotates** once every 24 hours, which gives us day and night.

Programs repeat things too. A **loop** runs the same lines again and again. A **count-controlled loop** repeats an exact number of times: print a star, five times. **Selection** means the program chooses a path: IF it rains, THEN take an umbrella. With **sequence**, selection and **iteration**, you can build any program.

Countries also repeat a yearly cycle: they buy and sell with each other. Goods sold to other countries are **exports**; goods bought from them are **imports**. **Developed countries** often sell services and machines, while many **developing countries** sell food and raw materials, though this is changing fast.

Talk about it :

1. Explain to a child why summer days are long and winter days are short.
2. Name three things your family owns that were imported. Where were they made?

Physics

Topics 5–6 · Nuclear physics, Space physics

📡 **electromagnetic wave**

/ɪˌlektərəmæg'netɪk weɪv/

🛡️ **lead**

/li:d/

➔ **penetrating**

/'penɪtreɪtɪŋ/

📄 **sample**

/'sæmpl/

🕒 **half-life**

/hɑ:f laɪf/

🔔 **smoke alarm**

/sməʊk ə'la:m/

✚ **sterilise**

/'sterəlaɪz/

🎗️ **cancer**

/'kænsə/

🏠 **living cells**

/'lɪvɪŋ selz/

🦠 **bacteria**

/bæk'tɪəriə/

🧬 **mutation**

/mju:'teɪʃn/

💉 **dose**

/dəʊs/

☀️ **exposure**

/ek'spəʊʒə/

🛡️ **shielding**

/'ʃi:ldɪŋ/

🔄 **rotate**

/rəʊ'teɪt/

 axis <i>/ˈæksɪs/</i>			
 tilted <i>/ˈtɪltɪd/</i>			
 Sun <i>/sʌn/</i>			
 seasons <i>/ˈsiːznz/</i>			
 Moon <i>/muːn/</i>			
 phases <i>/ˈfeɪzɪz/</i>			
 circumference <i>/sɜːˈkʌmfərəns/</i>			

Chemistry

Topic 11 · Organic chemistry

 bitumen <i>/ˈbɪtjuːmən/</i>			
 Alkanes <i>/ˈælkəɪnz/</i>			
 substitution reaction <i>/ˌsʌbstɪˈtjuːʃn rɪˈækʃn/</i>			
 photochemical reaction <i>/ˌfəʊtəʊˈkemɪkl rɪˈækʃn/</i>			
 ultraviolet light <i>/ˌʊltrəˈvaɪələɪt laɪt/</i>			
 Alkenes <i>/ˈælkɪːnz/</i>			
 Cracking <i>/ˈkrækɪŋ/</i>			

+ addition reactions

/ə'dɪʃn rɪ'ækʃnz/

↪ addition polymerisation

/ə'dɪʃn ,pɒlɪməraɪ'zeɪʃn/

💧 condensation
polymerisation

/kɒndən'seɪʃn ,pɒlɪməraɪ'zeɪʃn/

🍷 Alcohols

/'ælkəhɒlz/

🍷 ethanol

/'eθənɒl/

🍷 fermentation

/fɜːmənt'eɪʃn/

📐 ethene

/'iːθiːn/

💧 solvent

/'sɒlvənt/

🧪 Carboxylic acids

/ˌkɑːbək'sɪlɪk 'æsɪdz/

🍷 amino acid

/ə'mɪːnəʊ 'æsɪd/

💧 vinegar

/'vɪnɪgə/

🌀 ester

/'estə/

↪ polymer

/'pɒlɪmə/

Biology

Topics 17–19 · Inheritance, Variation and selection, Organisms and their environment

 **colour blindness**

/ˈkʌlə ˈblaɪndnəs/

 **continuous variation**

/kənˈtɪnjuːəs ˌveəriˈeɪʃn/

 **discontinuous variation**

/dɪskənˈtɪnjuːəs ˌveəriˈeɪʃn/

 **ABO blood groups**

/ˌeɪ biː ˈəʊ bləd gruːps/

 **mutation**

/mjuːˈteɪʃn/

 **gene mutation**

/dʒiːn mjuːˈteɪʃn/

 **ionising radiation**

/ˈaɪənəɪzɪŋ ˌreɪdɪˈeɪʃn/

 **adaptive feature**

/əˈdæptɪv ˈfiːtʃə/

 **inherited**

/ɪnˈherɪtɪd/

 **survive**

/səˈvaɪv/

 **reproduce**

/rɪˈprəʊˈdjuːs/

 **hydrophytes**

/ˈhaɪdrəˈfaɪts/

 **xerophytes**

/ˈzɪərəˈfaɪts/

 **natural selection**

/ˈnætʃərəl sɪˈleɪʃn/

 **many offspring**
/'meni 'ɒfsprɪŋ/

 **competition**
/ˌkɒmpə'tɪʃn/

 **resources**
/rɪ'zɔ:sɪz/

 **selective breeding**
/sɪ'lektɪv 'bri:dɪŋ/

 **artificial selection**
/ˌɑ:tɪ'fɪʃl sɪ'leɪʃn/

 **crops**
/krɒps/

 **food chain**
/fu:d tʃeɪn/

 **food web**
/fu:d web/

 **producer**
/prə'dju:sə/

 **consumer**
/kən'su:mə/

 **herbivore**
/'hɜ:bɪvɔ:/

 **carnivore**
/'kɑ:nɪvɔ:/

 **decomposer**
/ˌdi:kəm'pəʊzə/

 **decomposition**
/ˌdi:kɒmpə'zɪʃn/

 **trophic level**
/'trəʊfɪk 'levl/

 **pyramid**
/'pɪrəmid/

 biomass /baɪəʊ'mæs/			
 crop plants /krɒp plænts/			
 overharvesting /əʊvə'hɑ:vɪstɪŋ/			

Mathematics

Topics 7–8 · Transformations and vectors, Probability

 position vector /pə'zɪʃn 'vektə/			
 collinear /'kɒlɪniə/			
 coplanar /kəʊ'pleɪnə/			
 probability /ˌprɒbə'bɪlɪti/			
 event /ɪ'vent/			
 outcome /'aʊtkʌm/			
% relative frequency /'relətɪv 'fri:kwənsi/			
 fair /feə/			
 bias /'baɪəs/			
 random /'rændəm/			
 expected frequency /ek'spektɪd 'fri:kwənsi/			

 combined events	_____	_____	_____
<i>/kəm'baɪnd ɪ'vents/</i>			
 independent events	_____	_____	_____
<i>/ˌɪndɪ'pendənt ɪ'vents/</i>			
 mutually exclusive	_____	_____	_____
<i>/'mju:tʃu:əli eks'klu:sɪv/</i>			
 sample space diagram	_____	_____	_____
<i>/'sæmpl speɪs 'daɪəgræm/</i>			
 tree diagram	_____	_____	_____
<i>/tri: 'daɪəgræm/</i>			

Computer Science

Topics 8–9 · Programming, Databases

() parameter	_____	_____	_____
<i>/pə'ræmɪtə/</i>			
 local variable	_____	_____	_____
<i>/'ləʊkl 'veəriəbl/</i>			
 global variable	_____	_____	_____
<i>/'gləʊbl 'veəriəbl/</i>			
 library routine	_____	_____	_____
<i>/'laɪbrəri ru:'ti:n/</i>			
 maintainable	_____	_____	_____
<i>/meɪn'teɪnəbl/</i>			
 meaningful identifiers	_____	_____	_____
<i>/'mi:nɪŋfl aɪ'dentɪfaɪəz/</i>			
 comments	_____	_____	_____
<i>/'kɒments/</i>			
[] array	_____	_____	_____
<i>/ə'reɪ/</i>			
# index	_____	_____	_____
<i>/'ɪndeks/</i>			

 **one-dimensional (1D)**

array

/wʌn daɪ'menʃənəl ə'reɪ/

 **two-dimensional (2D)**

array

/tu: daɪ'menʃənəl ə'reɪ/

 **file**

/faɪl/

 **database**

/'deɪtəbeɪs/

 **single-table database**

/'sɪŋɡl 'teɪbl 'deɪtəbeɪs/

 **record**

/'rekɔ:d/

 **field**

/fi:ld/

 **text/alphabetic**

/tekst ælfənju:'merɪk/

 **character**

/'kærɪktə/

 **date/time**

/deɪt taɪm/

 **primary key**

/'praɪməri ki:/

Economics

Topics 5–6 · Economic development, International trade and globalisation

 **population structure**

/ˌpɒpjʊ'leɪʃn 'strʌktʃə/

 **population pyramid**

/ˌpɒpjʊ'leɪʃn 'pɪrəˌmɪd/

 **ageing population**

/ˈeɪdʒɪŋ ˌpɒpjʊˈleɪʃn/

 **economic development**

/ˌiːkəˈnɒmɪk dɪˈveləpmənt/

 **developed countries**

/dɪˈveləpt ˈkʌntrɪz/

 **developing countries**

/dɪˈveləpɪŋ ˈkʌntrɪz/

 **subsistence farming**

/sʌbˈsɪstəns ˈfɑːmɪŋ/

 **debt**

/det/

 **trade**

/treɪd/

 **exports**

/ˈeksɒrts/

 **imports**

/ɪmˈpɔːts/

 **free trade**

/friː treɪd/

 **domestic**

/dəˈmestɪk/

 **compete**

/kəmˈpiːt/

English

Topics 5–11 · Writing a report, Vocabulary and text types

 **text type**

/tekst taɪp/

 **notice**

/ˈnəʊtɪs/

 **leaflet**
/'li:flɪt/

 **act**
/ækt/

 **aim**
/eɪm/

Morning Reading

Grade 10 · Week 17

Read each word aloud, then copy the English word three times.

◦

Reading

Read the passage aloud twice.

◦

Hundreds of machines fly silently above your head. A **satellite** is any object that orbits a planet. The Moon is a natural one; the others we built and launched. They stay in orbit because **gravity** keeps pulling them towards the Earth while they move forward at great speed. Satellites carry phone calls, take weather photos, and tell your map app exactly where you are.

Satellites collect mountains of data, and data needs a home. A **database** stores information in an organised way. Each row is a **record**, for example one weather station. Programs read the data from a **file** or search the database directly.

Trade now connects the whole planet; we call this **globalisation**. A **multinational company** makes phones in one country, writes software in another, and sells everywhere. Some governments use **trade protection**: a **tariff** taxes imports to make them dearer, and a **quota** limits how many may enter. Supporters of **free trade** say open markets make goods cheaper for everyone.

Talk about it :

1. Your phone map knows where you are. How do satellites make this possible?
2. A tariff makes imported shoes expensive. Who wins and who loses?

Physics

Topic 6 · Space physics

 **orbital speed**

/ˈɔːbɪtl spɪd/

 **Solar System**

/ˈsəʊlə ˈsɪstəm/

 **planet**

/ˈplænɪt/

 **dwarf planet**

/dwɔːf ˈplænɪt/

 **white dwarf**

/waɪt dwɔːf/

 **rocky**

/ˈrɒki/

 **gaseous**

/ˈgeɪsɪəs/

 **gas giant**

/gæs ˈdʒaɪənt/

 **ice giant**

/aɪs ˈdʒaɪənt/

 **red giant**

/red ˈdʒaɪənt/

 **asteroid**

/ˈæstərɔɪd/

 **satellite**

/ˈsætələɪt/

 **comet**

/ˈkɒmɪt/

 **gravity**

/ˈgrævɪti/

 **gravitational potential energy**

/ˌgrævɪˈteɪʃənl pəˈtenʃl ˈenədʒi/

conservation of energy

/ˌkɒnsə'veɪʃn ɒv 'enədʒi/

ellipse

/ɪ'lips/

dust

/dʌst/

element

/'elɪmənt/

accretion

/ə'kreɪʃn/

accretion disc

/ə'kreɪʃn disk/

star

/staː/

Chemistry

Topics 11–12 · Organic chemistry, Experimental techniques and chemical analysis

monomers

/'mɒnəʊməz/

repeat unit

/rɪ'pi:t 'juːnɪt/

Polyamides

/'pɒli'eɪmaɪdz/

Nylon

/'naɪlɒn/

Polyesters

/'pɒli'estəz/

Plastics

/'plæstɪks/

landfill

/'lændfɪl/

Proteins

/'prəʊtiːnz/

	stop-watch /stɒp wɒtʃ/			
	thermometer /θɜː'mɒmɪtə/			
	balance /'bæləns/			
	measuring cylinder /'meɪʒərɪŋ 'sɪlɪndə/			
	burette /bjʊə'ret/			
	volumetric pipette /ˌvɒljuː'metrɪk pɪ'pet/			
	gas syringe /gæs sɪ'rɪndʒ/			
	saturated solution /'sætʃəreɪtɪd sə'luːʃn/			
	residue /'resɪdjuː/			
	filtrate /'fɪltreɪt/			
	end-point /end pɔɪnt/			
	paper chromatography /'peɪpə krəʊmə'tɒɡrəfi/			
	locating agent /ləʊ'keɪtɪŋ 'eɪdʒənt/			

Biology

Topics 19–20 · Organisms and their environment, Human influences on ecosystems

 **foreign species**

/ˈfɒrən ˈspiːsiːz/

 **carbon cycle**

/ˈkɑːbən ˈsaɪkl/

 **combustion**

/kəmˈbʌstʃn/

 **fossil fuels**

/ˈfɒsl ˈfjuːəlz/

 **nitrogen cycle**

/ˈnaɪtrədʒn ˈsaɪkl/

 **ammonium ions**

/æˈməʊniəm ˈaɪənz/

 **nitrification**

/ˌnaɪtrɪfɪˈkeɪʃn/

 **nitrogen fixation**

/ˈnaɪtrədʒn fɪkˈseɪʃn/

 **denitrification**

/diːˌnaɪtrɪfɪˈkeɪʃn/

 **population**

/ˌpɒpjʊˈleɪʃn/

 **community**

/kəˈmjʊːnɪti/

 **ecosystem**

/ˈiːkəʊsɪstəm/

 **predation**

/prɪˈdeɪʃn/

 **lag phase**

/læg feɪz/

 **exponential phase**

/ˌekspəˈnenʃl feɪz/

—	stationary phase	_____	_____	_____
	<i>/ˈsteɪʃənəri feɪz/</i>			
↘	death phase	_____	_____	_____
	<i>/deθ feɪz/</i>			
♂	fertilisers	_____	_____	_____
	<i>/ˈfɜːtəlaɪzəz/</i>			
🍷	yields	_____	_____	_____
	<i>/jiːldz/</i>			
🐛	insecticides	_____	_____	_____
	<i>/ˌɪnˈsektɪsaɪdz/</i>			
🌿	herbicides	_____	_____	_____
	<i>/ˈhɜːbɪsaɪdz/</i>			
♂	weeds	_____	_____	_____
	<i>/wiːdz/</i>			
🐄	livestock	_____	_____	_____
	<i>/ˈlaɪvstɒk/</i>			
🌾	monoculture	_____	_____	_____
	<i>/ˈmɒnəʊkʌltʃə/</i>			
🌿	biodiversity	_____	_____	_____
	<i>/ˌbaɪəʊdaɪˈvɜːsɪti/</i>			
🏠	habitats	_____	_____	_____
	<i>/ˈhæbɪtæts/</i>			
🏭	pollution	_____	_____	_____
	<i>/pəˈluːʃn/</i>			
🪚	deforestation	_____	_____	_____
	<i>/dɪˌfɒrɪˈsteɪʃn/</i>			
💀	extinction	_____	_____	_____
	<i>/ekˈstɪŋkʃn/</i>			
🗑️	sewage	_____	_____	_____
	<i>/ˈsuːɪdʒ/</i>			
💧	eutrophication	_____	_____	_____
	<i>/juːtrəfiˈkeɪʃn/</i>			

Mathematics

Topics 8–9 · Probability, Statistics

↺ **with replacement**

/wɪð rɪ'pleɪsmənt/

↓ **without replacement**

/wɪ'ðaʊt rɪ'pleɪsmənt/

∞ **conditional probability**

/kən'dɪʃənəl prəbə'bɪləti/

||| **statistical**

/stə'tɪstɪkl/

☰ **data**

/'deɪtə/

≡ **tally table**

/'tæli 'teɪbl/

☒ **two-way table**

/tuː weɪ 'teɪbl/

— **mean**

/mi:n/

≡ **median**

/'mi:di:ən/

↗ **mode**

/məʊd/

⋈ **frequency**

/'fri:kwənsi/

☒ **grouped data**

/gru:pt 'deɪtə/

||| **modal class**

/'mɒdl klæs/

☐ **quartile**

/'kwɔ:taɪl/

[] **interquartile range**

/,ɪntə'kwɔ:taɪl reɪndʒ/

 **bar chart**
/bɑːtʃɑːt/

Computer Science

Topics 2–10 · Data transmission, Databases, Boolean logic

 **unique**
/juːˈniːk/

 **structured query language**
/ˈstrʌktʃəd ˈkwɪəri ˈlæŋɡwɪdʒ/

 **query**
/ˈkwɪəri/

 **condition**
/kənˈdɪʃn/

 **ascending**
/əˈsendɪŋ/

 **descending**
/dɪˈsendɪŋ/

 **Boolean logic**
/ˈbuːliən ˈlɒdʒɪk/

 **truth table**
/truːθ ˈteɪbl/

 **NOT gate**
/nɒt geɪt/

 **AND gate**
/ænd geɪt/

 **OR gate**
/ɔː geɪt/

 **NAND gate**
/nænd geɪt/

 **NOR gate**
/nɔː geɪt/

 **XOR gate**
/ˈeksɔː geɪt/

() **logic expression**

/ˈlɒdʒɪk ekˈspresjən/

 **logic circuit**

/ˈlɒdʒɪk ˈsɜːkɪt/

 **problem statement**

/ˈprɒbləm ˈsteɪtmənt/

 **parity block**

/ˈpærɪti blɒk/

 **parity byte**

/ˈpærɪti baɪt/

Economics

Topic 6 · International trade and globalisation

 **dependent**

/dɪˈpendənt/

 **globalisation**

/ˌɡləʊbəlaɪˈzeɪʃn/

 **multinational company**

/ˌmʌltɪˈnæʃənl ˈkʌmpəni/

 **host country**

/həʊst ˈkʌntri/

 **trade protection**

/treɪd prəˈtekʃn/

 **tariff**

/ˈtærɪf/

 **quota**

/ˈkwɒtə/

 **embargo**

/emˈbɑːɡəʊ/

 **infant industry**

/ˈɪnfənt ˈɪndʌstri/

 **dumping**

/ˈdʌmpɪŋ/

 **exchange rate**

/eks'tʃeɪndʒ reɪt/

 **currency**

/ˈkʌrənsi/

 **floating exchange rate**

/ˈfləʊtɪŋ eks'tʃeɪndʒ reɪt/

 **appreciation**

/əˌpriːʃi'eɪʃn/

English

Topics 5–7 · Writing a report, Writing an article, Writing a review

 **solution**

/səˈluːʃn/

 **flat**

/flæt/

 **decide**

/dɪ'saɪd/

 **believable**

/bɪˈliːvəbl/

 **criticise**

/ˈkɪtɪsaɪz/

 **fair**

/feə/

Morning Reading

Grade 10 · Week 18

Read each word aloud, then copy the English word three times.

。

Reading

Read the passage aloud twice.

。

Look up on a clear night. Every star you see belongs to our **galaxy**, the **Milky Way**, a slowly turning city of more than one hundred billion stars. Distances in space are so huge that we measure them in **light-years**, the distance light travels in one year. When a giant star dies, it can explode as a **supernova**, and the heaviest ones collapse into a **black hole**, whose gravity is so strong that even light cannot escape. The **Universe** contains billions of galaxies like ours.

Astronomers keep their star data in databases and search it with **structured query language**. A **query** like SELECT name FROM stars WHERE distance < 10 finds every star within ten light-years. Underneath, computers decide everything with **Boolean logic**: an **AND gate** outputs true only if both inputs are true; an **OR gate** needs just one. A **truth table** lists every case.

Money also travels between countries. The **exchange rate** is the price of one **currency** in another. When the yuan buys more dollars than before, it has seen an **appreciation**.

Talk about it :

1. If a star is 100 light-years away, when did the light you see leave it?
2. You are travelling abroad and the yuan appreciates. Is your trip cheaper or dearer? Why?

Physics

Topics 3–6 · Waves, Electricity and magnetism, Space physics

☆ **neutron star**

/ˈnjuːtrɒn stɑː/

⊗ **nuclear reaction**

/ˈnjuːklɪə rɪˈækʃn/

✦ **galaxy**

/ˈgæləksi/

≡ **Milky Way**

/ˈmɪlki weɪ/

📏 **light-year**

/laɪt jɪə/

— **diameter**

/daɪˈæmɪtə/

🌐 **Universe**

/ˈjuːnɪvɜːs/

☁ **interstellar cloud**

/,ɪntəˈstelə klaʊd/

✦ **protostar**

/ˈprəʊtəʊstɑː/

🔥 **fuel**

/ˈfjuːəl/

☁ **nebula**

/ˈnebjʊlə/

☆ **red supergiant**

/red ˈsuːpədzʌɪənt/

✦ **supernova**

/ˌsuːpəˈnəʊvə/

○ **black hole**

/blæk həʊl/

← **receding**

/rɪˈsiːdɪŋ/

→ **redshift**

/ˈredʃɪft/

[] **expanding**

/ekˈspændɪŋ/

✦ **Big Bang**

/bɪg bæŋ/

📺 **microwave**

/ˈmaɪkrəʊweɪv/

(☞) **cosmic microwave
background radiation**

/ˈkɒzmɪk ˈmaɪkrəʊweɪv ˈbækgraʊnd
ˌreɪdɪˈeɪʃn/

🔍 **Hubble constant**

/ˈhʌbl ˈkɒnstənt/

🌐 **poles**

/pəʊlz/

Chemistry

Topics 7–12 · Acids, bases and salts, Organic chemistry, Experimental techniques and chemical analysis

📊 **chromatogram**

/krəʊˈmætəgræm/

💎 **crystallisation**

/ˌkrɪstəlaɪˈzeɪʃn/

💧 **simple distillation**

/ˈsɪmpl dɪstriˈleɪʃn/

🧪 **nitric acid**

/ˈnaɪtrɪk ˈæsɪd/

🥄 **silver nitrate**

/ˈsɪlvə ˈnaɪtreɪt/

🧂 **barium nitrate**

/ˈbeəriəm ˈnaɪtreɪt/

 barium /'beəriəm/			
 bromide /'brəʊmaɪd/			
 iodide /'aɪədaɪd/			
 sodium hydroxide /'səʊdiəm haɪ'drɒksaɪd/			
 sulfite /'sʌlfaɪt/			
 ammonium /æ'məʊniəm/			
 limewater /'laɪmwɔ:tə/			
 flame test /'fleɪm test/			
 effervescence /ˌefə'vesəns/			
 amide linkage /ə'maɪd 'lɪŋkɪdʒ/			
 ester linkage /'estə 'lɪŋkɪdʒ/			

Biology

Topics 20–21 · Human influences on ecosystems, Biotechnology and genetic modification

 non-biodegradable /nɒn ˌbaɪəʊdɪ'greɪdəbl/			
 plastics /'plæstɪks/			
 methane /'mi:θeɪn/			

 **greenhouse effect**

/ˈɡriːnhaʊs ɪˈfekt/

 **climate change**

/ˈklaɪmət tʃeɪndʒ/

 **sustainable**

/səˈsteɪnəbl/

 **conserved**

/kənˈsɜːvd/

 **quotas**

/ˈkwəʊtəz/

 **closed seasons**

/kləʊzd ˈsiːznz/

 **endangered**

/enˈdeɪndʒəd/

 **hunting**

/ˈhʌntɪŋ/

 **introduced species**

/ˌɪntrəˈdʒuːst ˈspiːsiːz/

 **captive breeding**

/ˈkæptɪv ˈbriːdɪŋ/

 **artificial insemination**

/ˌɑːtɪˈfɪʃl ɪnˌseɪnˈneɪʃn/

 **in vitro fertilisation**

/ɪn ˈvɪtrəʊ ˌfɜːtɪlaɪˈzeɪʃn/

 **seed banks**

/siːd bæŋks/

 **genetic variation**

/dʒiˈnetɪk ˌveəriˈeɪʃn/

 **biotechnology**

/ˌbaɪəʊteknɒlədʒi/

 ethical /'eθɪkl/			
 biofuel /ˌbaɪəʊ'fjuːəl/			
 pectinase /'pektɪneɪs/			
 washing powders /'wɒʃɪŋ 'paʊdəz/			
 lactase /'lækteɪs/			
 lactose /'læktəʊs/			
 fermenter /fɜː'mentə/			
 penicillin /ˌpenɪ'sɪlɪn/			
 mycoprotein /'maɪkəprəʊtiːn/			
 genetic modification /dʒɪ'netɪk ˌmɒdɪfɪ'keɪʃn/			
 restriction enzymes /rɪ'strɪkʃn 'enzaɪmz/			
 sticky ends /'stɪki endz/			
 ligase /'lɪgeɪs/			
 recombinant plasmid /ˌrɪː'kɒmbɪnənt 'plæzmɪd/			
 resistance /rɪ'zɪstəns/			

Mathematics

Topics 4–9 · Geometry, Statistics

 **pie chart**

/paɪ tʃɑ:t/

 **pictogram**

/'pɪktəgrəm/

 **stem-and-leaf diagram**

/stem ænd li:f 'daɪəgrəm/

 **frequency distribution**

/'fri:kwənsɪ ,dɪstrɪ'bju:ʃn/

 **scatter diagram**

/'skætə 'daɪəgrəm/

 **correlation**

/'kɒrɪ'leɪʃn/

 **positive correlation**

/'pɒzɪtɪv ,kɒrɪ'leɪʃn/

 **negative correlation**

/'negətɪv ,kɒrɪ'leɪʃn/

 **zero correlation**

/'ziərəʊ ,kɒrɪ'leɪʃn/

 **line of best fit**

/laɪn ɒv best fɪt/

 **cumulative frequency**

/'kju:mjələtɪv 'fri:kwənsɪ/

 **percentile**

/pə'sentail/

 **histogram**

/'hɪstəgrəm/

 **frequency density**

/ˈfri:kwənsi 'densɪti/

 **class width**

/klæs wɪθ/

 **decagon**

/dɪ'kæɡən/

Computer Science

Topics 3–6 · Hardware, Software, Automated and emerging technologies

 **fetch–execute cycle**

/fetʃ'eksɪkjʊt 'saɪkl/

 **Cloud storage**

/klaʊd 'stɔːrɪdʒ/

 **static**

/'stætɪk/

 **dynamic**

/daɪ'næmɪk/

 **firmware**

/'fɜːmweə/

 **bootloader**

/'buːtləʊdə/

 **providing a user interface**

/prə'vaɪdɪŋ ə 'juːzə 'ɪntəfeɪs/

 **managing peripherals**

/'mænɪdʒɪŋ pə'rɪfərəlz/

 **managing multitasking**

/'mænɪdʒɪŋ 'mʌltitæskɪŋ/

 **providing a platform**

/prə'vaɪdɪŋ ə 'plætfɔːm/

 **assembler**
/ə'semblə/

 **sensor types**
/'sensə taɪps/

 **accelerometer**
/æk,sələ'rɒmɪtə/

 **humidity**
/hju:'mɪdɪti/

 **proximity**
/prɒk'sɪmɪti/

 **knowledge base**
/'nɒlɪdʒ beɪs/

 **rule base**
/ru:l beɪs/

 **inference engine**
/'ɪnfərəns 'endʒɪn/

 **Machine learning**
/mə'ʃi:n 'lɜ:nɪŋ/

Economics

Topics 4–6 · Government and the macroeconomy, International trade and globalisation

 **depreciation**
/dɪ,pri:ʃi'eɪʃn/

 **current account**
/'kʌrənt ə'kaʊnt/

 **trade in goods**
/treɪd ɪn ɡʊdz/

 **trade in services**
/treɪd ɪn 'sɜ:vɪsɪz/

 **primary income**
/'praɪməri 'ɪŋkʌm/

 **secondary income**

/ˈsekəndəri ˈɪŋkʌm/

 **current account deficit**

/ˈkʌrənt əˈkaʊnt ˈdefɪsɪt/

 **current account surplus**

/ˈkʌrənt əˈkaʊnt ˈsɜːpləs/

 **competitiveness**

/kəmˈpetɪtɪvnes/

 **primary sector**

/ˈpraɪməri ˈsektə/

 **secondary sector**

/ˈsekəndəri ˈsektə/

 **tertiary sector**

/ˈtɜːʃjəri ˈsektə/

 **deindustrialisation**

/ˌdeɪndəˈstriəlɪˈzeɪʃn/

English

Topics 7–11 · Writing a review, Speaking skills, Vocabulary and text types

 **brehtaking**

/ˈbreɪtɪkɪŋ/

 **politely**

/pəˈlaɪtli/

 **revise**

/rɪˈvaɪz/

 **interrupts**

/ˈɪntərʌpts/

 **spaced review**

/speɪst rɪˈvjuː/

