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# Morning Reading 晨读

Grade 11 · AS · Week 5

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

## Reading 阅读

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

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

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

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

*Talk about it* 说一说:

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

## Physics

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*Topics 2-3 · Kinematics, Dynamics*

[ ] **light gate** 光电门

⌚ **reaction-time** 反应时间

↑↓ **range** 射程

|                            |  |  |  |
|----------------------------|--|--|--|
| ↗ projectile 抛体            |  |  |  |
| ⇨ linear momentum 动量       |  |  |  |
| ↗ resultant force 合力       |  |  |  |
| ⌘ collision 碰撞             |  |  |  |
| ⚡ impulse 冲量               |  |  |  |
| ↔ kinetic energy 动能        |  |  |  |
| → external force 外力        |  |  |  |
| ⚡ electrostatic 静电         |  |  |  |
| ↑ normal contact force 支持力 |  |  |  |
| 🚀 thrust 推力                |  |  |  |
| ⊕ gravitational field 重力场  |  |  |  |
| 🌀 friction 摩擦力             |  |  |  |
| 💧 viscous 黏性               |  |  |  |
| ≡ drag 阻力                  |  |  |  |
| 💧 fluid 流体                 |  |  |  |

## Chemistry

*Topics 2-3 · Atoms, molecules and stoichiometry, Chemical bonding*

|                                   |  |  |  |
|-----------------------------------|--|--|--|
| 🧪 titration 滴定                    |  |  |  |
| # significant figures 有效数字        |  |  |  |
| 🔗 electronegativity 电负性           |  |  |  |
| 🔗 Pauling electronegativity 鲍林电负性 |  |  |  |
| 🔗 ionic bonding 离子键               |  |  |  |

|                                                                                                                           |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------|--|--|--|
|  <b>electrostatic attraction</b><br>静电引力 |  |  |  |
|  <b>lattice</b> 晶格                       |  |  |  |
|  <b>metallic bonding</b> 金属键             |  |  |  |
|  <b>delocalised electrons</b> 离域电子       |  |  |  |
|  <b>covalent bonding</b> 共价键             |  |  |  |
|  <b>expand the octet</b> 扩展八隅体           |  |  |  |
|  <b>coordinate bond</b> 配位键              |  |  |  |
|  <b>sigma bond</b> $\sigma$ 键            |  |  |  |
|  <b>overlap</b> 重叠                       |  |  |  |
|  <b>pi bond</b> $\pi$ 键                |  |  |  |
|  <b>hybridisation</b> 杂化               |  |  |  |
|  <b>bond energy</b> 键能                 |  |  |  |
|  <b>bond length</b> 键长                 |  |  |  |

## Biology

### *Topic 2 · Biological molecules*

|                                                                                                                |  |  |  |
|----------------------------------------------------------------------------------------------------------------|--|--|--|
|  <b>covalent bond</b> 共价键   |  |  |  |
|  <b>glycosidic bond</b> 糖苷键 |  |  |  |
|  <b>condensation</b> 缩合     |  |  |  |
|  <b>hydrolysis</b> 水解       |  |  |  |
|  <b>amylose</b> 直链淀粉        |  |  |  |
|  <b>amylopectin</b> 支链淀粉    |  |  |  |
|  <b>glycogen</b> 糖原         |  |  |  |

|                                                                                                      |  |  |  |
|------------------------------------------------------------------------------------------------------|--|--|--|
|  insoluble 不溶       |  |  |  |
|  water potential 水势 |  |  |  |
|  osmosis 渗透         |  |  |  |
|  hydrogen bond 氢键   |  |  |  |
|  microfibril 微纤丝    |  |  |  |
|  triglyceride 甘油三酯  |  |  |  |
|  non-polar 非极性      |  |  |  |
|  hydrophobic 疏水     |  |  |  |
|  glycerol 甘油        |  |  |  |
|  fatty acid 脂肪酸     |  |  |  |
|  ester bond 酯键      |  |  |  |
|  saturated 饱和      |  |  |  |
|  double bond 双键   |  |  |  |
|  unsaturated 不饱和  |  |  |  |
|  insulation 隔热    |  |  |  |
|  phosphate 磷酸     |  |  |  |

## Mathematics

### Topic 1 · Pure Mathematics 1

|                                                                                                         |  |  |  |
|---------------------------------------------------------------------------------------------------------|--|--|--|
|  segment 弓形          |  |  |  |
|  sine 正弦             |  |  |  |
|  cosine 余弦           |  |  |  |
|  tangent function 正切 |  |  |  |
|  principal value 主值  |  |  |  |

|                                         |  |  |  |
|-----------------------------------------|--|--|--|
| <b>= identity</b> 恒等式                   |  |  |  |
| <b>∧ trigonometric equation</b><br>三角方程 |  |  |  |
| <b>[ ] binomial expansion</b> 二项<br>展开式 |  |  |  |
| <b>⊞ binomial coefficient</b> 二项<br>式系数 |  |  |  |
| <b>≡ progression</b> 数列                 |  |  |  |

## Further Mathematics

*Topic 1 · Further Pure Mathematics 1*

|                             |  |  |  |
|-----------------------------|--|--|--|
| <b>⌒ polar curves</b> 极坐标曲线 |  |  |  |
| <b>□ plane</b> 平面           |  |  |  |
| <b>× vector product</b> 向量积 |  |  |  |
| <b>↗ vectors</b> 向量         |  |  |  |
| <b>∞ skew lines</b> 异面直线    |  |  |  |

## Computer Science

*Topic 3 · Hardware*

|                                      |  |  |  |
|--------------------------------------|--|--|--|
| <b>→] input devices</b> 输入设备         |  |  |  |
| <b>[→ output devices</b> 输出设备        |  |  |  |
| <b>💻 primary memory</b> 主存储<br>器     |  |  |  |
| <b>🖨 processor</b> 处理器               |  |  |  |
| <b>💾 secondary storage</b> 辅助存<br>储器 |  |  |  |
| <b>🖥 embedded system</b> 嵌入式<br>系统   |  |  |  |

|                                                                                                                              |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|  <b>firmware</b> 固件                         |  |  |  |
|  <b>laser printer</b> 激光打印机                 |  |  |  |
|  <b>drum</b> 感光鼓                            |  |  |  |
|  <b>toner</b> 墨粉                            |  |  |  |
|  <b>3D printer</b> 3D 打印机                   |  |  |  |
|  <b>microphone</b> 麦克风                      |  |  |  |
|  <b>capacitor</b> 电容器                       |  |  |  |
|  <b>analogue-to-digital converter</b> 模数转换器 |  |  |  |
|  <b>hard disk</b> 硬盘                        |  |  |  |
|  <b>tracks</b> 磁道                           |  |  |  |
|  <b>sectors</b> 扇区                        |  |  |  |
|  <b>read/write head</b> 读写头               |  |  |  |
|  <b>solid-state drive</b> 固态硬盘            |  |  |  |
|  <b>transistors</b> 晶体管                   |  |  |  |
|  <b>optical disc</b> 光盘                   |  |  |  |
|  <b>touchscreen</b> 触摸屏                   |  |  |  |
|  <b>resistive</b> 电阻式                     |  |  |  |
|  <b>capacitive</b> 电容式                    |  |  |  |
|  <b>virtual reality</b> 虚拟现实              |  |  |  |

## Economics

*Topics 1–2 · Basic economic ideas and resource allocation, The price system and the microeconomy*

|                                                                                                               |  |  |  |
|---------------------------------------------------------------------------------------------------------------|--|--|--|
|  <b>consumer goods</b> 消费品 |  |  |  |
|---------------------------------------------------------------------------------------------------------------|--|--|--|

|                                                                                                                     |  |  |  |
|---------------------------------------------------------------------------------------------------------------------|--|--|--|
|  <b>free good</b> 免费物品             |  |  |  |
|  <b>economic good</b> 经济物品         |  |  |  |
|  <b>private good</b> 私人物品          |  |  |  |
|  <b>rivalry</b> 竞争性                |  |  |  |
|  <b>excludability</b> 排他性          |  |  |  |
|  <b>public good</b> 公共物品           |  |  |  |
|  <b>non-rivalry</b> 非竞争性           |  |  |  |
|  <b>non-excludability</b> 非排他性     |  |  |  |
|  <b>free-rider problem</b> 搭便车问题   |  |  |  |
|  <b>national defence</b> 国防       |  |  |  |
|  <b>merit good</b> 优值品           |  |  |  |
|  <b>demerit good</b> 劣值品         |  |  |  |
|  <b>information failure</b> 信息失灵 |  |  |  |
|  <b>demand</b> 需求                |  |  |  |