



Edexcel IGCSE 4MA1

# Vectors & Transformation Geometry Vocabulary

向量与变换几何词汇卡

Topic 5 | Foundation & Higher

FREE | Edexcel 4MA1 | Bilingual 双语

📘 Bilingual Vocabulary Cards 双语词汇卡

🎓 For Chinese-English Math Education

适用于中英双语数学教学

👉 Vocab Tables ✎ Printable Flashcards 📖 Foundation & Higher

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## How to Use This Resource / 使用说明 **What's inside / 内容概览**

- ▣ **Vocabulary Tables** (p. 3–5) — 30 bilingual terms with pinyin & definitions
- ☒ **Flashcards** (p. 6–11) — 3 sets of printable cards, print front/back pages back-to-back
- ➥ **Higher labels** — Look for (H) to spot Higher-only content



## Differentiation Tips / 分层教学建议

- ★ **Foundation students** — Focus on transformation terms without the (H) marker
- ➥ **Higher students** — Learn all terms including (H) items (especially vectors!)
- 👤 **Bilingual learners** — Use the Chinese and Pinyin columns for support
- 🖨 **Printing tip** — Print flashcard pages double-sided for front/back cards

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## 5.2 Transformation Geometry (Both Tiers)

5.2 变换几何 (两种分级)

### III Transformation Basics | 变换基础

English 英文	Chinese 中文	Pinyin 拼音	Definition 定义
Transformation	变换	biàn huàn	A change in position, size, or orientation of a shape
Image	像	xiàng	The shape after a transformation has been applied
Object	原像	yuán xiàng	The original shape before transformation
Reflection	反射	fǎn shè	A transformation that flips a shape over a mirror line
Mirror line	对称轴	duì chēn zhóu	The line of reflection

### III Rotation & Enlargement | 旋转与放大

English 英文	Chinese 中文	Pinyin 拼音	Definition 定义
Rotation	旋转	xuán zhuǎn	A transformation that turns a shape around a fixed point
Centre of rotation	旋转中心	xuán zhuǎn zhōng xīn	The fixed point around which rotation occurs
Angle of rotation	旋转角	xuán zhuǎn jiǎo	The angle through which a shape is rotated
Enlargement	放大	fàng dà	A transformation that changes the size of a shape
Centre of enlargement	放大中心	fàng dà zhōng xīn	The fixed point from which enlargement occurs
Scale factor	比例因子	bǐ lì yīn zǐ	The ratio of image size to object size; can be positive, fractional, or negative

## 5.2 Translation & 5.1 Vectors (Higher)

5.2 平移与 5.1 向量 (高级)

### Translation & Combined Transformations | 平移与复合变换

English 英文	Chinese 中文	Pinyin 拼音	Definition 定义
<b>Translation</b>	平移	píng yí	A transformation that slides a shape without rotation or reflection
<b>Invariant</b>	不变量	bù biàn liàng	A property that remains unchanged after transformation
<b>Combined transformation</b>	复合变换	fù hé biàn huàn	Two or more transformations applied in sequence

### Vector Basics | 向量基础

English 英文	Chinese 中文	Pinyin 拼音	Definition 定义
<b>Vector</b>	向量	xiàng liàng	A quantity with both magnitude and direction (H)
<b>Column vector</b>	列向量	liè xiàng liàng	A vector written as $(\begin{smallmatrix} x \\ y \end{smallmatrix})$ (H)
<b>Displacement</b>	位移	wèi yí	A vector representing change in position (H)
<b>Scalar</b>	标量	biāo liàng	A quantity with magnitude only, no direction (H)
<b>Scalar multiplication</b>	标量乘法	biāo liàng chēng fǎ	Multiplying a vector by a scalar (H)
<b>Vector addition</b>	向量加法	xiàng liàng jiā fǎ	Adding two vectors by adding corresponding components (H)
<b>Vector subtraction</b>	向量减法	xiàng liàng jiǎn fǎ	Subtracting one vector from another (H)

## 5.1 Magnitude & Vector Geometry (Higher)

5.1 模 与 向 量 几 何 (高 级)

### ☰ Magnitude & Special Vectors | 模与特殊向量

English 英文	Chinese 中文	Pinyin 拼音	Definition 定义
<b>Magnitude</b>	模	mó	The length of a vector, calculated as $\sqrt{x^2 + y^2}$ (H)
<b>Modulus</b>	模	mó	Another term for magnitude of a vector (H)
<b>Unit vector</b>	单位向量	dān wèi xiàng liàng	A vector with magnitude 1 (H)
<b>Position vector</b>	位置向量	wèi zhì xiàng liàng	A vector from the origin to a point (H)
<b>Zero vector</b>	零向量	líng xiàng liàng	A vector with magnitude 0, written as $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$ (H)

### ☰ Vector Relationships | 向量关系

English 英文	Chinese 中文	Pinyin 拼音	Definition 定义
<b>Parallel vectors</b>	平行向量	píng xíng xiàng liàng	Vectors with the same or opposite direction (H)
<b>Collinear</b>	共线	gòng xiàn	Points lying on the same straight line (H)
<b>Coplanar</b>	共面	gòng miàn	Vectors lying in the same plane (H)
<b>Resultant vector</b>	合向量	hé xiàng liàng	The vector sum of two or more vectors (H)

## Flashcards — Front (Terms)

闪 卡 正 面 — 术 语

**Transformation**

变 换

**Reflection**

反 射

**Rotation**

旋 转

**Enlargement**

放 大

**Translation**

平 移

**Scale Factor**

比 例 因 子

Cut along dashed lines. Print this and next back-to-back. 沿虚线剪开。本页与下一页双面打印。

## Flashcards — Back (Definitions)

闪 卡 背 面 — 定 义

### Reflection

反射

A transformation that flips a shape over a mirror line  
在镜面线上翻转图形的变换

### Transformation

变换

A change in position, size, or orientation of a shape  
改变图形位置、大小或方向

### Enlargement

放大

A transformation that changes the size of a shape  
改变图形大小的变换

### Rotation

旋转

A transformation that turns a shape around a fixed point  
绕固定点旋转图形的变换

### Scale Factor

比例因子

The ratio of image size to object size  
像与原像的大小比率

### Translation

平移

A transformation that slides a shape without rotation or reflection  
不旋转不反射地平移图形的变换

🖨️ Print pages 6–7 back-to-back, then cut along dashed lines. 第 6–7 页双面打印, 沿虚线剪裁。

## Flashcards — Front (More Terms)

闪卡正面 — 更多术语

**Vector**

向量

**Column Vector**

列向量

**Scalar**

标量

**Magnitude**

模

**Position Vector**

位置向量

**Displacement**

位移

Cut along dashed lines. Print this and next back-to-back. 沿虚线剪开。本页与下一页双面打印。

## Flashcards — Back (Definitions)

闪卡背面—定义

### Column Vector

列向量

A vector written as  $\begin{pmatrix} x \\ y \end{pmatrix}$  (H)  
写成列形式的向量 (H)

### Vector

向量

A quantity with both magnitude and direction (H)  
既有大小又有方向的量 (H)

### Magnitude

模

The length of a vector,  $\sqrt{x^2 + y^2}$  (H)  
向量的长度  $\sqrt{x^2 + y^2}$  (H)

### Scalar

标量

A quantity with magnitude only, no direction (H)  
只有大小没有方向的量 (H)

### Displacement

位移

A vector representing change in position (H)  
表示位置变化的向量 (H)

### Position Vector

位置向量

A vector from the origin to a point (H)  
从原点到某点的向量 (H)

🖨️ Print pages 8–9 back-to-back, then cut along dashed lines. 第 8–9 页双面打印, 沿虚线剪裁。

## Flashcards — Front (Even More Terms)

闪卡正面 — 更多术语

**Mirror Line**

对称轴

**Centre of Rotation**

旋转中心

**Vector Addition**

向量加法

**Parallel Vectors**

平行向量

**Collinear**

共线

**Resultant Vector**

合向量

Cut along dashed lines. Print this and next back-to-back. 沿虚线剪开。本页与下一页双面打印。

## Flashcards — Back (Definitions)

闪 卡 背 面 — 定 义

### Centre of Rotation

旋转中心

The fixed point around  
which rotation occurs  
旋转所围绕的固定点

### Mirror Line

对称轴

The line of reflection  
反射的对称线

### Parallel Vectors

平行向量

Vectors with the same  
or opposite direction (H)  
方向相同或相反的向量 (H)

### Vector Addition

向量加法

Adding two vectors by adding  
corresponding components (H)  
通过对应分量相加来相加向量 (H)

### Resultant Vector

合向量

The vector sum of two  
or more vectors (H)  
两个或多个向量的和 (H)

### Collinear

共线

Points lying on the same straight line (H)  
在同一直线上的点 (H)

🖨️ Print pages 10–11 back-to-back, then cut along dashed lines. 第 10–11 页双面打印, 沿虚线剪裁。