CONTENTS

LESS STRESS MORE SUCCESS

Please note:

The Exam Questions marked by the symbol (exam Q) in this book are selected from the following:

1. SEC Exam papers
2. Sample exam papers
3. Original and sourced exam-type questions

1 Coordinate Geometry of the Line

aims

- ☐ To know where to find the coordinate geometry formulae in the booklet of formulae and tables
- ☐ To learn how to apply these formulae to procedural and in-context examination questions
- ☐ To gain the ability, with practice, to recall and select the appropriate technique required by the exam questions

Coordinating the plane and plotting points

Coordinates are used to describe the **position** of a point on a plane (flat surface).

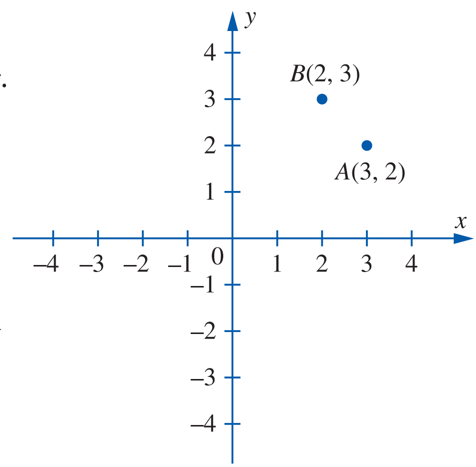
Two lines are drawn at right angles to each other.

The horizontal line is called the ***x*-axis**.

The vertical line is called the ***y*-axis**.

The two axes meet at a point called the **origin**.

The plane is called the **Cartesian** (kar-tee-zi-an) plane.



Every point on the plane has two coordinates, an ***x*-coordinate** and a ***y*-coordinate**.

The coordinates are enclosed in brackets.

The x-coordinate is always written first, then a comma, followed by the y-coordinate.

On the diagram, the coordinates of the point A are (3, 2).

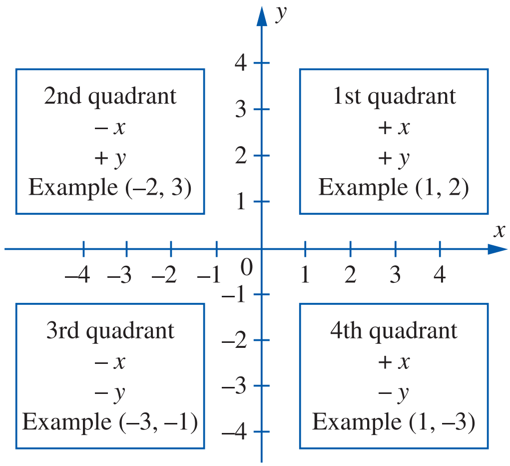
This is usually written as $A(3, 2)$.

key point

- In a couple (x, y) the order is important
- The graph above shows that the point $A(3, 2)$ is different to the point $B(2, 3)$

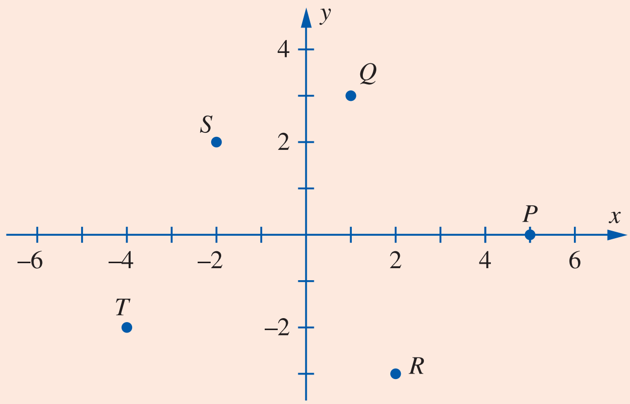
The four quadrants

The intersecting x-axis and y-axis divide the plane into four regions called **quadrants**. These are numbered 1st, 2nd, 3rd and 4th, as shown on the right.



Example

Write down the coordinates of the points P, Q, R, S and T.



Solution

$P = (5, 0)$ $Q = (1, 3)$ $R = (2, -3)$ $S = (-2, 2)$ $T = (-4, -2)$

Translation

In mathematics, movement in a straight line is called a **translation**.
Under a translation, every point is moved the same distance in the same direction.

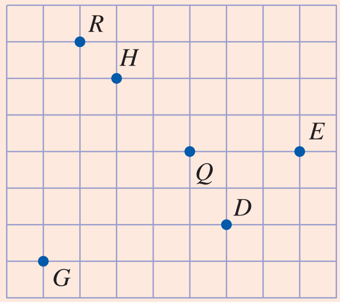
Example

Describe the translation that maps the points

(i) G to H

(ii) E to Q

(iii) R to D



Solution

(i) $G \longrightarrow H$ is described by 2 units to the right and 5 units up.

This can be written as $\begin{pmatrix} 2 \\ 5 \end{pmatrix}$.

(ii) $E \longrightarrow Q$ is described by 3 units to the left and 0 units up (or down). This can be written as $\begin{pmatrix} -3 \\ 0 \end{pmatrix}$.

(iii) $R \longrightarrow D$ is described by 4 units to the right and 5 units down. This can be written as $\begin{pmatrix} 4 \\ -5 \end{pmatrix}$.

key point

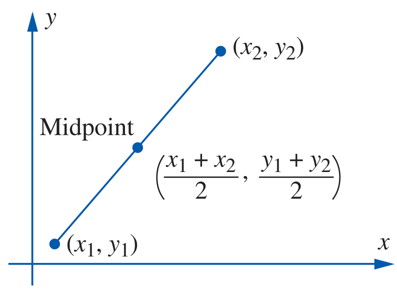
A more comprehensive treatment of translations can be found in Chapter 4 on transformation geometry.

Midpoint of a line segment

If (x_1, y_1) and (x_2, y_2) are two points, their midpoint is given by the formula:

$$\text{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

(*See* booklet of formulae and tables page 18)



key point

Before using coordinate geometry formulae, always allocate one point to be (x_1, y_1) and the other to be (x_2, y_2).

Example

$A(8, 5)$ and $B(-10, 11)$ are two points. Find the midpoint of $[AB]$.

Solution

$$\text{Midpoint formula} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

Let $(x_1, y_1) = (8, 5)$ and $(x_2, y_2) = (-10, 11)$

$$\text{Midpoint} = \left(\frac{8 - 10}{2}, \frac{5 + 11}{2}\right) = \left(\frac{-2}{2}, \frac{16}{2}\right) = (-1, 8)$$

In some questions, we will be given the midpoint and one end point of a line segment. We will be asked to find the other end point.

To find the other end point, use the following method:

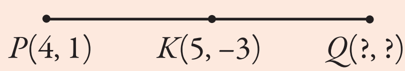
1. Draw a rough diagram.
2. Find the translation that maps (moves) the given end point to the midpoint.
3. Apply the same translation to the midpoint to find the other end point.

Example

If $K(5, -3)$ is the midpoint of $[PQ]$ and $P = (4, 1)$, find the coordinates of Q.

Solution

1. Rough diagram:



2. Translation from P to K, $\overrightarrow{PK}$. Rule: add 1 to x, subtract 4 from y.

This can be written as $\begin{pmatrix} 1 \\ -4 \end{pmatrix}$.

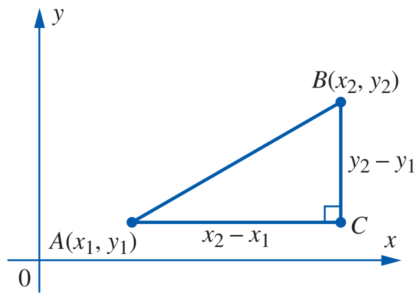
3. Apply this translation to K:

$$K(5, -3) \rightarrow (5 + 1, -3 - 4) = (6, -7)$$

$\therefore$ The coordinates of Q are $(6, -7)$.

Distance between two points

The given diagram shows the points $A(x_1, y_1)$ and $B(x_2, y_2)$.



$|BC| = y_2 - y_1$ and $|AC| = x_2 - x_1$

Using the theorem of Pythagoras:

$$|AB|^2 = |AC|^2 + |BC|^2$$
$$= (x_2 - x_1)^2 + (y_2 - y_1)^2$$
$$\therefore \quad |AB| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

The distance (length) between $A(x_1, y_1)$ and $B(x_2, y_2)$ is $|AB| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
(*See* booklet of formulae and tables page 18).

Example

Find the distance between the points $A(3, 2)$ and $B(5, -4)$.

Solution

Let $(x_1, y_1) = (3, 2)$ and $(x_2, y_2) = (5, -4)$

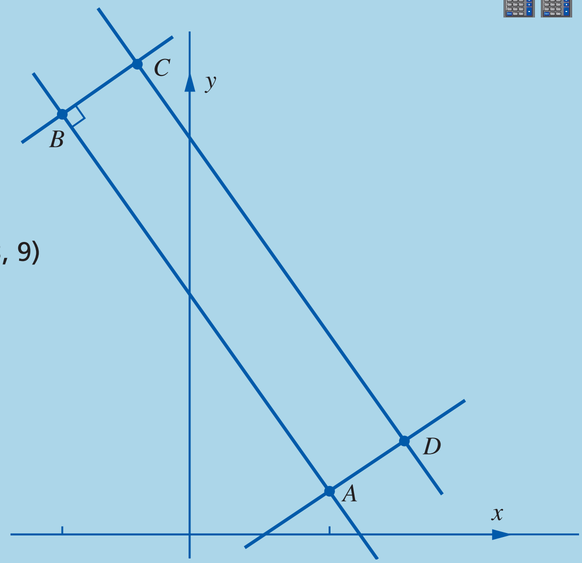
$$|AB| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(5 - 3)^2 + (-4 - 2)^2}$$
$$= \sqrt{2^2 + (-6)^2}$$
$$= \sqrt{4 + 36}$$
$$= \sqrt{40}$$
$$= 2\sqrt{10}$$

key point

At this stage the numbers are always positive.

exam Q

ABCD is a rectangle with $A(3, 1)$ and $B(-3, 9)$. Given $|BC| = \frac{1}{5}|AB|$, calculate the area of *ABCD*.



Solution:

Let $(x_1, y_1) = (3, 1)$ and $(x_2, y_2) = (-3, 9)$

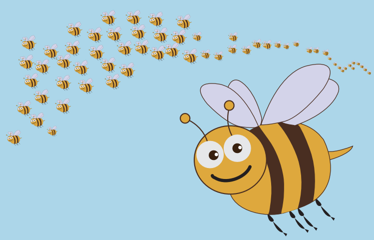
$$|AB| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(-3 - 3)^2 + (9 - 1)^2}$$
$$= \sqrt{(-6)^2 + (8)^2}$$
$$= \sqrt{36 + 64} = \sqrt{100} = 10$$

$$|BC| = \frac{1}{5}|AB| = \frac{1}{5}(10) = 2$$

Area rectangle *ABCD* = (length)(breadth) = (10)(2) = 20 square units

exam Q

Henry the bee travels in a swarm from Zone *A* to Zone *B*.



The swarm's movement from zone A to zone B can be modelled by the translation that maps $(0, 0) \rightarrow (-1708, 503)$.

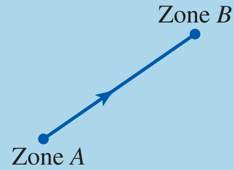
(i) If Henry's starting position in the swarm in Zone *A* is $(1005, -98)$ find his position when the swarm moves to Zone *B*.

(ii) Henry's best friend, Harriet, is also part of the swarm. If her position in Zone *B* is $(-711, 399)$, find her starting position.

(iii) Find the distance in cm between Henry and Harriet as they travel in the swarm when each unit is one mm.

Solution

(i) (0, 0) → (−1708, 503)

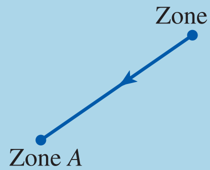


−1708 on the x-component

+503 on the y-component

Henry: (1005, −98) → (1005 − 1708, −98 + 503) = (−703, 405)

(ii) Harriet: (?, ?) → (−711, 399)



Working backwards from Zone B to Zone A

+1708 on the x-component

−503 on the y-component.

Harriet's Zone A position = (−711 + 1708, 399 − 503) = (997, −104)

(iii) The distance between Henry and Harriet in the swarm is always the same.
Hence, we can find the distance from:

Zone A. (1005, −98) to (997, −104) or **Zone B.** (−703, 405) to (−711, 399)

Here we find the distance from (1005, −98) to (997, −104).

Let $(x_1, y_1) = (1005, -98)$ and $(x_2, y_2) = (997, -104)$

$$\text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(997 - 1005)^2 + (-104 - (-98))^2}$$

$$= \sqrt{(-8)^2 + (-6)^2} = \sqrt{64 + 36} = \sqrt{100} = 10 \text{ units}$$

Since each unit is 1 mm

Then 10 units is 10 mm = 1 cm

key point

As an exercise, you could verify that the distance from (−711, 399) to (−703, 405) is also 10 units = 1 cm.

exam Q

When geese fly in formation, they form an inverted v-shape.

(i) If the lines of geese can be represented by the equations $2x + y - 11 = 0$ and $3x - 2y - 6 = 0$, find the coordinates of the leading goose.

After 1 hour, the leading goose has flown to a point (37, 67).

(ii) Assuming the geese flew in a straight line and taking each unit to represent 1 km, find the distance travelled by the geese to the nearest km.

(iii) Hence, find the average flying speed in m/s.

Solution

(i) Solving the linear equations in two variables:

$$\begin{aligned} 2x + y &= 11 && ① \\ 3x - 2y &= 6 && ② \\ 4x + 2y &= 22 && ① \times 2 \\ 3x - 2y &= 6 && ② \\ 7x &= 28 && \text{(Add)} \\ x &= 4 \end{aligned}$$

Put $x = 4$ into ① or ②

$$\begin{aligned} 2x + y &= 11 \quad ① \\ 2(4) + y &= 11 \\ 8 + y &= 11 \\ y &= 3 \end{aligned}$$

exam focus

Solving linear simultaneous equations is a skill you must know. Another example appears later in this chapter.

$\therefore$ The solution is $x = 4$ and $y = 3$ or $(4, 3)$

(ii) Use distance formula $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Let $(x_1, y_1) = (4, 3)$ and $(x_2, y_2) = (37, 67)$

Distance $= \sqrt{(37 - 4)^2 + (67 - 3)^2} = \sqrt{1\,089 + 4\,096} = \sqrt{5\,185}$

$= 72{\cdot}00694411$

Distance to nearest km $= 72$ km

(iii) Speed $= \dfrac{\text{Distance}}{\text{Time}} = \dfrac{72 \times 1\,000}{60 \times 60} = 20$ m/sec

exam focus

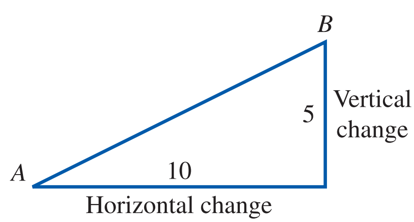
The exam may contain in-context questions at any stage. Be prepared to employ techniques learned elsewhere, as in the above question where Speed $= \dfrac{\text{Distance}}{\text{Time}}$. This would seem to have no link to coordinate geometry.

Slope of a line

The slope of the line *AB* is defined as the

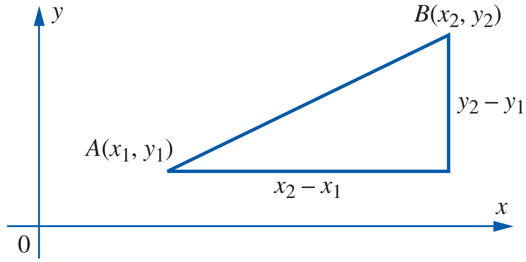
$$\frac{\text{vertical change}}{\text{horizontal change}} \quad \text{or} \quad \frac{\text{rise}}{\text{run}}$$

The slope of $AB = \dfrac{5}{10} = \dfrac{1}{2}$.



In the diagram on the right, the slope of AB is found by getting the

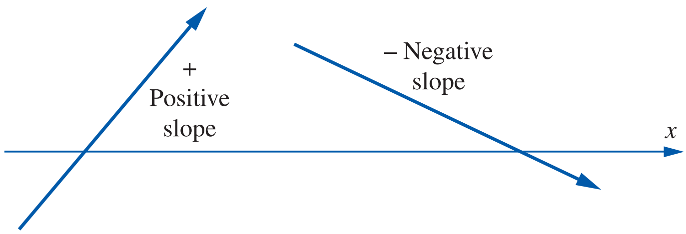
$$\frac{\text{vertical change}}{\text{horizontal change}} = \frac{y_2 - y_1}{x_2 - x_1}$$



Slope $= m = \dfrac{y_2 - y_1}{x_2 - x_1}$ (See booklet of formulae and tables page 18)

Positive and negative slopes

As we move from left to right the slope is positive if the line is rising and the slope is negative if the line is falling.



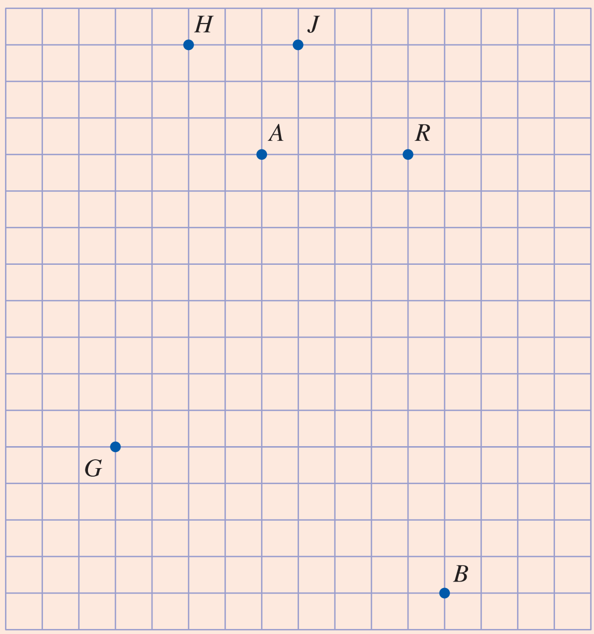
Example

Write down the slopes of the following lines in the diagram.

(i) GR (ii) BR

(iii) HJ (iv) GA

(v) AB (vi) BG



Solution

Use $\frac{\text{rise}}{\text{run}}$ (by counting the boxes) in each case to find:

(i) Slope GR $= \frac{8}{8} = 1$ — Line going up $\Rightarrow$ positive slope

(ii) Slope BR $= -\frac{12}{1} = -12$ — Line going down $\Rightarrow$ negative slope

(iii) Slope HJ $= \frac{0}{3} = 0$ — Horizontal line $\Rightarrow$ slope-zero

(iv) Slope GA $= \frac{8}{4} = 2$ — Line going up $\Rightarrow$ positive slope

(v) Slope AB $= -\frac{12}{5}$ — Line going down $\Rightarrow$ negative slope

(vi) Slope BG $= -\frac{4}{9}$ — Line going down $\Rightarrow$ negative slope

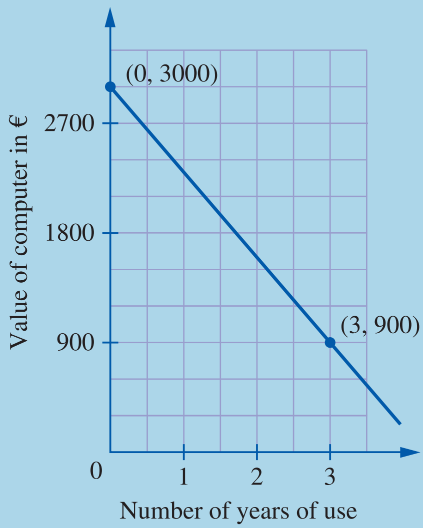
exam Q

An accountant plots the straight line value of a computer over a three-year period on the given graph.

(i) Find the slope of the line.

(ii) Hence write down the average rate of change in the value of the computer.

Justify your answer.



Solution

(i) Method 1

Using $\frac{\text{rise}}{\text{run}}$

$$\frac{\text{rise}}{\text{run}} = \frac{\text{Down from 3000 to 900}}{\text{In 3 years}}$$

$$= \frac{-2100}{3}$$

$$= -700$$

Method 2

Using $\frac{y_2 - y_1}{x_2 - x_1}$

$(x_1, y_1) = (0, 3000)$ and $(x_2, y_2) = (3, 900)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{900 - 3000}{3 - 0} = \frac{-2100}{3}$$

$m = -700$

exam focus

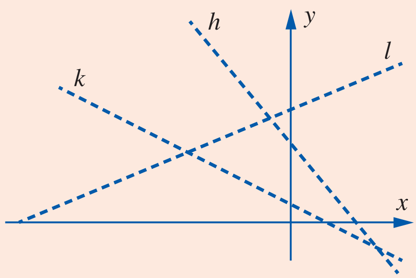
Either method is accepted in this case.

key point

The average rate of change $= m =$ the slope of the line.

(ii) The average rate of change is -700, which is a decrease in value of the computer by €700 per year.

Example



Which of the above lines k, h, or l has a positive slope? Justify your answer.

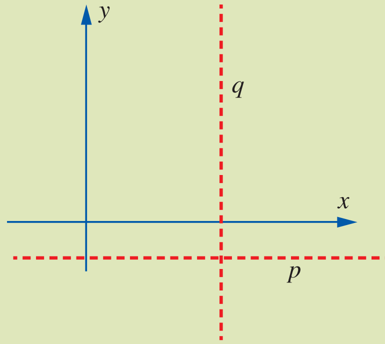
Solution

As we move from left to right, we observe l is the only line that is rising. Hence l is the only line with a positive slope.

key point

From the diagram, we can see:

- The slope of the horizontal line p is zero.
- The slope of the vertical line q is not defined.



The equation of a line

The formula: $y - y_1 = m(x - x_1)$ (See booklet of formulae and tables page 18)

gives the equation of a line when we have:

- A point on the line (x_1, y_1)
- The slope of the line, m.

Example

Find the equation of the line through the point $(5, -1)$ whose slope is $\frac{2}{3}$.
Write your answer in the form $ax + by + c = 0$, where a, b and $c \in \mathbb{R}$.

Solution

$y - y_1 = m(x - x_1)$

$(x_1, y_1) = (5, -1)$ and $m = \frac{2}{3}$ are given in the question

$\therefore y - (-1) = \frac{2}{3}(x - 5)$

$y + 1 = \frac{2}{3}(x - 5)$

$3(y + 1) = 2(x - 5)$ Multiply both sides by 3 to remove the fraction

$3y + 3 = 2x - 10$

$-2x + 3y + 3 + 10 = 0$

$-2x + 3y + 13 = 0$

$2x - 3y - 13 = 0$

key point

The formula cannot be used to get the equation of a vertical line since its slope is not defined. The equation of a vertical line is always x = a constant.
This is covered in more detail later in this chapter.

exam Q

The graph shows the cost of using a lecture theatre dependent on the number of attendees.

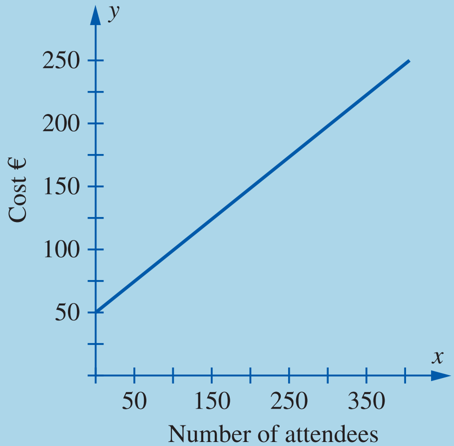
(i) What is the cost of a lecture theatre for 250 people?

(ii) Write down the slope of the line.

(iii) How does the slope help to calculate the extra cost if the number of attendees increases by 88.

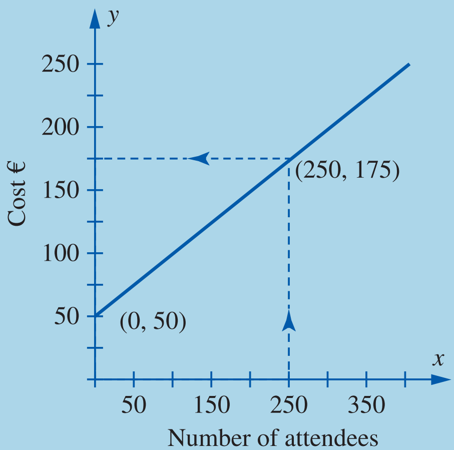
(iv) Find the equation of the line.

(v) The graph does not start at (0, 0), the origin. Explain why this is to be expected.



Solution

(i)



Reading from the graph
$\Rightarrow$ Cost of 250 attendees is €175

(ii) Slope of the line:

Method 1

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Where $(x_1, y_1) = (0, 50)$

and $(x_2, y_2) = (250, 175)$

$$\text{Slope} = \frac{175 - 50}{250 - 0} = \frac{125}{250} = \frac{1}{2}$$

Method 2

$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{\text{up from 50 to 175}}{\text{up from 0 to 250}}$$

$$= \frac{+125}{+250}$$

$$= \frac{1}{2}$$

(iii) Slope $= \frac{1}{2} = \frac{\text{cost €}}{\text{number of attendees}}$

This indicates a rise of €1 for every 2 attendees, i.e. €0·5 for every extra attendee.

Hence an extra 88 attendees cost € $\frac{1}{2}$ each $= 88\left(\frac{1}{2}\right) =$ €44.

(iv) Equation of the line

$m = \frac{1}{2}$ and $(x_1, y_1) = (0, 50)$

use $y - y_1 = m(x - x_1)$

$y - 50 = \frac{1}{2}(x - 0)$

$2y - 100 = x$ Multiply both sides by 2

$2y = x + 100$

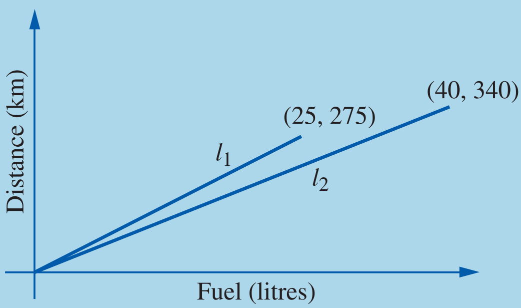
(v) The graph does not start at the origin because:

- A booking charge applies.
- To cover the cost of heating and lighting.
- The theatre attendant must be paid to open and close the theatre.
- There will be a charge even if no one attends.

This list is not exhaustive. You may have a different answer.

exam Q

The graphs below show the relationship between distances travelled and fuel consumption for John's car. The segments l_1 and l_2 represent the fuel consumption at steady speeds of 60 km/h and 100 km/h respectively.



(a) Find the slopes of l_1 and l_2.

(b) What do these slopes tell you about the fuel consumption of the car at these speeds?

(c) Fuel costs 149·9 cent per litre. John drives a distance of 200 km at a steady speed. How much cheaper is the journey at 60 km/h than at 100 km/h?

Solution

(a) Slope $l_1 = \frac{\text{rise}}{\text{run}} = \frac{275}{25} = 11$ and Slope $l_2 = \frac{\text{rise}}{\text{run}} = \frac{340}{40} = 8{\cdot}5$

(b) Speed 60 km/hour is associated with the slope of $l_1 = 11$

Speed 100 km/hour is associated with the slope of $l_2 = 8{\cdot}5$

The higher slope for l_1 indicates that you get more km/litre at the lower speed. Or you could state that more fuel is used at the higher speed.

(c) l_1 gets 11 km for 1 litre

l_1 gets 1 km for $\frac{1}{11}$ litre

l_1 gets 200 km for $\frac{200}{11}$ litres

l_1 gets 200 km for 18·18 litres

l_2 gets 8·5 km for 1 litre

l_2 gets 1 km for $\frac{1}{8{\cdot}5}$ litre

l_2 gets 200 km for $\frac{200}{8{\cdot}5}$ litres

l_2 gets 200 km for 23·53 litres

$\Rightarrow$ 23·53 − 18·18 = 5·35 litres less fuel consumed at the lower speed.

$\therefore$ 5·35 × 149·9 cent = 801·965 cent cheaper at the lower speed.

Answer: 802 cent or €8·02.

exam focus

This question was awarded 15 marks in total.

14 marks were awarded if **either** part (a) or part (c) were fully correct.

Part (b) was awarded 7 marks if the other two parts were not attempted.

Watch your time budget. Attempt every part of every question.

The slope of a line when given its equation

To find the slope of a line when given its equation, do the following:

Method 1:

Rearrange the equation to get y on its own, then the number in front of x is the slope.

13 Classroom-Based Assessments (CBAs)

aims

- ☐ To become familiar with the four elements of assessment for Junior Cycle mathematics
- ☐ To be familiar with the details of the Classroom-Based Assessment 2
- ☐ To be able to understand and apply the Statistical-Enquiry Cycle
- ☐ To be familiar with the criteria of quality for assessment
- ☐ To understand the four descriptors for the CBA and the criteria associated with each descriptor
- ☐ To understand the steps involved in starting your investigation and examining a menu of suggestions for investigation
- ☐ To be familiar with the procedure involved with how to carry out a statistical investigation
- ☐ To be able to use the checklist provided to ensure that you haven't missed any key elements in your investigation

Introduction

As mentioned in the Introduction chapter of this book, your assessment in Junior Cycle mathematics consists of four elements.

1. **Classroom-Based Assessment 1 (CBA 1)**

   This is a mathematical investigation and it is carried out during your second year of the three-year Junior Cycle. **CBA 1 is covered in *Less Stress More Success Maths Book 1*.**

2. **Classroom-Based Assessment 2 (CBA 2)**

   This is a statistical investigation and it is carried out during your third year of the three-year Junior Cycle. **CBA 2 is covered in this chapter.**

3. **Assessment Task**

   This is a written assignment and it is carried out during your third year of the three-year Junior Cycle, after you have completed CBA 2.

4. **Written exam paper**

   This is a 2-hour written exam and it take place at the end of third year, with the rest of your written exams.

CBA 2: Statistical Investigation

The investigation is an opportunity for you to show that you can apply statistics to an area that interests you. Your teacher will give you a timetable and deadline for submitting your investigation.

The details of the investigation are as follows:

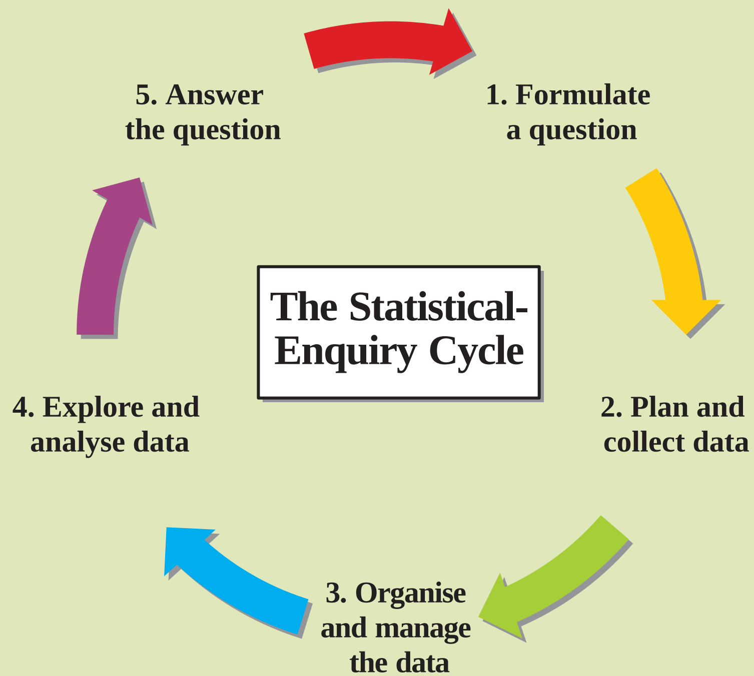
Format: A report may be presented in a wide range of formats.
Preparation: A student will, over a three-week period in third year, follow the Statistical-Enquiry Cycle to investigate a mathematical problem.

The Statistical-Enquiry Cycle is as follows:

1. Formulate a question
2. Plan and collect unbiased, representative data
3. Organise and manage the data
4. Explore and analyse the data, using appropriate displays and numerical summaries
5. Answer the original question, giving reasons based on the analysis section

key point

You must be familiar with the Statistical-Enquiry Cycle:



CBA 2: Assessment criteria and four descriptors

The investigation is assessed by the class teacher. A student will be awarded one of the following categories of achievement:

- Yet to meet expectations
- In line with expectations
- Above expectations
- Exceptional

Assessment criteria

A good investigation should be clear and easily understood by one of your fellow classmates (peers) and self-explanatory all of the way through.
The criteria are split into four areas A, B, C and D:

A. Designing the investigation
B. Identifying the variables of interest
C. Organising and managing the data
D. Analysing and interpreting data summaries

Linking the criteria with the four categories of achievement (descriptors)

A. Designing the investigation

Criteria	Achievement
Uses given statistics question and collection method	Yet to achieve expectations
Poses a question that anticipates variability and plans to collect/source the type of data appropriate for the question posed	In line with expectations
Poses a question that anticipates variability and seeks generalisation; data collection plan shows awareness of how variability affects the validity and reliability of the findings	Above expectations
Poses a question that anticipates variability and seeks generalisation, study design will produce as far as practical reliable and valid results by taking into account variability and confounding variables	Exceptional

B. Identifying the variables of interest

Criteria	Achievement
Gathers and displays data	Yet to achieve expectations
Identifies variable and develops a measuring strategy for measuring the dependent and independent variable	In line with expectations
Chosen measuring strategy provides valid and reliable data	Above expectations
Describes relationship between the variables and describes considerations related to reliability and fairness	Exceptional

C. Organising and managing the data

Criteria	Achievement
Makes statements about the data displayed	Yet to achieve expectations
Displays data in a way that allows patterns to be identified; identifies patterns and describes the data in terms of those patterns	In line with expectations
Uses appropriate data displays and describes the data in terms of measures of centre and spread	Above expectations
Uses distributions to analyse the data and justifies measures of centre used to describe the data	Exceptional

D. Analysing and interpreting data summaries

Criteria	Achievement
No concrete connection back to the original question	Yet to achieve expectations
Makes a concrete connection to the original question of the investigation but does not look beyond the data	In line with expectations
Reports the findings and the conclusion refers to the original question and attempts to look beyond the data	Above expectations
Interprets the data in relation to the original question; conclusion displays understanding of the limitations of generalising to the population and considers the need to reformulate the original question in light of the findings	Exceptional

Academic honesty

Academic honesty means that your work is based on your own original ideas and not copied from other people. However, you may draw on the work and ideas of others, but this must be acknowledged. This would be put into a reference list at the end of your investigation, known as a bibliography. In addition, you should use your own language and expression.

Record-keeping

Throughout the investigation, keep a journal, either on paper or online. This journal will also help you to demonstrate academic honesty. The journal will be of great assistance in focusing your efforts when writing your CBA 2 investigation.

- Make notes of any websites or books you use
- You are encouraged to use a variety of support materials and present your work in a variety of formats
- Keep a record of your actions so you can show your teacher how much time you are spending on your investigation
- Remember to follow your teacher's advice and meet your CBA 2 timetable
- The teacher is there to facilitate you, so do not be afraid to ask for guidance. The more focused your questions are, the better guidance your teacher can give you.

Evidence of learning

The following evidence is required

- A report
- Student research records

You must report your research and findings in a format of your choice. The report can be completed at the end of the investigation. If a typed or hand-written report is the format of choice, the total length of the report would typically be in the 650–800 words range (excluding tables, graphs, reference list and research records), but this should not be regarded as a rigid requirement.

A statistical investigation may be presented in other formats, quite effectively (e.g. posters, podcasts or multimedia). However, you must take care that all the research can be judged on the final product alone. For example, a poster presentation may allow you to select and present highlights of your research, but it is also necessary to include a written report of approximately 400 words to show the deeper research carried out.

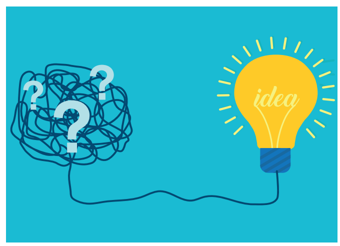
Vital tools for the Statistical Investigation

The following tools should prove very useful to you when carrying out your Statistical Investigation:

- The three chapters in this book
    - Statistics I: Statistical Investigations
    - Statistics II: Central Tendency and Spread of Data
    - Statistics III: Representing Data
- Two pages on 'Glossary of Statistical Terms' at the end of this chapter
- *Census at schools* website, which has a large store of recorded data. This could help you to prove or disprove your assertions
- Be familiar with appropriate use of technology to sort and display data (e.g. spreadsheets)
- Highlight the data points that belong to you in your displays (if appropriate).

Choosing a topic

You should choose a topic that you are interested in, because then you will be inclined to put more effort into the project. In addition, you will enjoy working on your project and this will shine through. You should discuss the topic with your teacher before you put too much time and effort into it, in case your idea is not in line with what a Statistical Investigations should be.



If you cannot think of a topic yourself, then you can ask your teacher for help in coming up with a topic to investigate. Below are some ideas that might help you to come up with an investigation of your own.

Suggestions for investigation, with ideas to consider:

- Investigate eating trends of today's youths.
    - Sample group
    - Survey on eating habits
    - Vegetarians?
    - Fruit or vegetable intake
    - Sugar intake