Name	Date started	Target end date

WJEC GCSE Mathematics and Numeracy (Double Award) — Question Pack

Foundation coordinates and linear graphs: plotting and reading points in all four quadrants, building a table of values for y = mx + c, and identifyin

REVISE
.wales

F2.12 — Coordinates & linear graphs (y = mx + c)

Spec 2.4.1, 2.4.2, 2.4.3 — Unit 2 (no calculator)

Foundation coordinates and linear graphs: plotting and reading points in all four quadrants, building a table of values for y = mx + c, and identifying gradient m and y-intercept c from the equation, the graph or a coordinate table. Sourced from legacy WJEC GCSE Mathematics-Numeracy Foundation papers (3300U10/U20) and accessible content from Intermediate papers (3300U30/U40), organised for revision under the 2025 spec.

2025 SPECIFICATION

Estimated time for entire question pack: ~1 hours 42 minutes

*Derived from the GCSE Higher pace of **~1.5 min/mark** (68 marks across 33 questions).*

*You are advised to **not** attempt to complete all of this in one sitting.*

ABOUT THIS QUESTION PACK

This is a **focused single-topic practice pack**, not a single mock paper. Questions are organised against the 2025 specification.

Questions are ordered chronologically by sitting, with custom-written and SAM questions at the end.

INSTRUCTIONS

Use black ink or black ball-point pen. Show all working — method marks are awarded for clear setup.

*A calculator is **not** permitted on any question in this pack (Unit 2 is the non-calculator paper).*

Coordinates & linear graphs (y = mx + c) — what the new spec asks

WJEC GCSE Mathematics (first teaching 2025) · Unit 2: non-calculator.

Coordinates in four quadrants 2.4.1

- Plot and read points (x, y) including negatives.
- Identify which quadrant a point lies in.
- Find the midpoint of a line segment by inspection.

Linear graphs from y = mx + c 2.4.2

- Build a table of values from the equation.
- Plot points and join with a single ruled line.
- Read coordinates off a drawn line.

Gradient and intercept 2.4.3

- Identify gradient m from the equation or graph.
- Identify y-intercept c from the equation or graph.
- Compare two lines using their m and c values.

Exam strategy 2.4

- Non-calculator — show the table of values.
- Use a ruler. Extend the line across the visible grid.
- Label axes and the line with its equation.

Crib sheet »

Coordinates & linear graphs (y = mx + c) in one page

Quick-reference notes — revisit before each question. Don't use during the questions.

Coordinates

(x, y): x is across, y is up. Origin is (0, 0).

x is always written *first*.

Four quadrants

Top right (+,+), top left (−,+), bottom left (−,−), bottom right (+,−).

Equation of a straight line

$$y = mx + c$$

m = gradient (steepness). c = y-intercept (where the line crosses the y-axis).

Gradient

$$m = \text{rise} \div \text{run}$$

Pick two points, count up/down and across.

Positive m goes up ↗, negative m goes down ↘.

Table of values

Choose x values, substitute, list y.

For y = 2x + 1: x = 0,1,2 ⇒ y = 1, 3, 5.

Common traps

- Plotting (y, x) instead of (x, y).
- Reading the gradient as just 'rise' without dividing by run.
- Joining points with a curve instead of a ruled straight line.

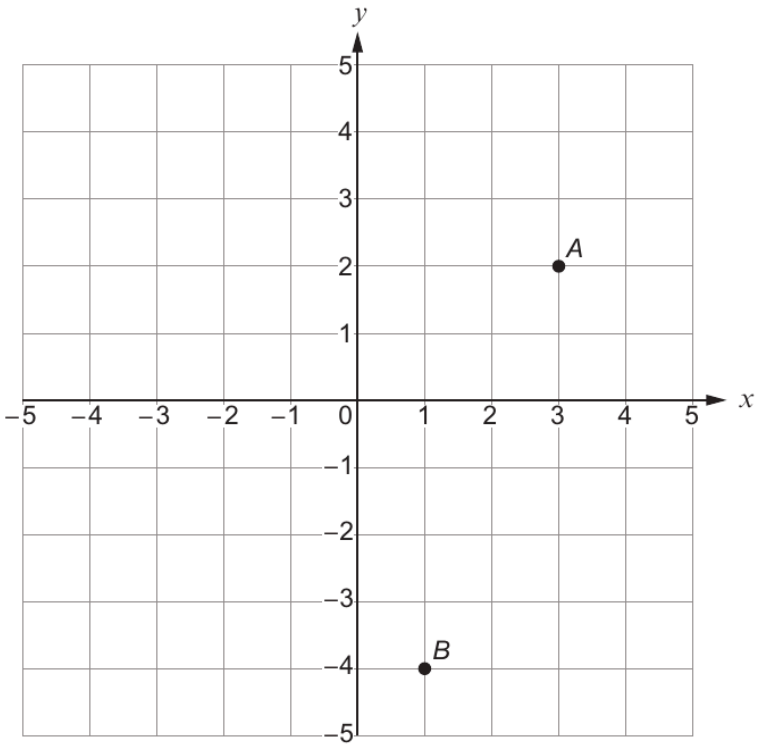
Examiner only

6. *(a)* The points *A* and *B* are plotted on the grid below.
Write down the coordinates of *A* and *B*. [2]

A (..... , ...) *B* (..... , ...)

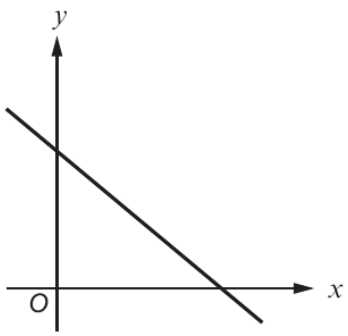
(b) The point *C* is the midpoint of the line *AB*.
Find the coordinates of *C*. [2]

C (..... , ...)



Examiner only

13. *(a)*



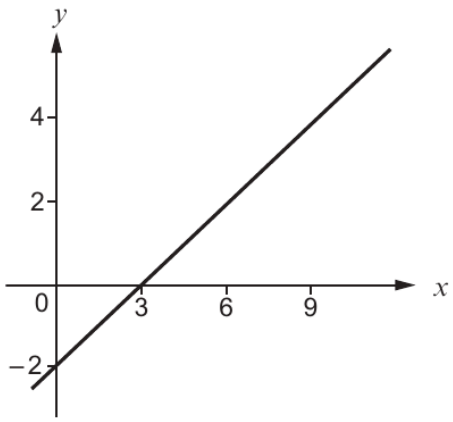
Which **one** of the following equations could represent the line shown in the graph above?
Circle your answer. [1]

$y = -x - 2$ $y = -x + 2$ $y = x + 2$ $y = x - 2$ $y = -x.$

(b) Which **one** of the following points lies on the line $2y = 3x + 4$?
Circle your answer. [1]

(2, –5) (5, 2) (–2, 5) (2, 5) (–2, –5)

(c)



What is the gradient of the line shown in the graph above?
Circle your answer. [1]

$\frac{3}{2}$ $-\frac{3}{2}$ $\frac{2}{3}$ $-\frac{2}{3}$ -6

Examiner only

(c) If a large number of people played the game, approximately what fraction of them would you expect to choose a white ball?
Circle your answer. [1]

$\frac{1}{10}$ $\frac{1}{5}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{2}$

18. (a) Factorise $x^3 - 5x$. [1]

(b) Expand and simplify $(2x - 3)(x + 4)$. [2]

(c) Factorise $x^2 - 3x - 28$. [2]

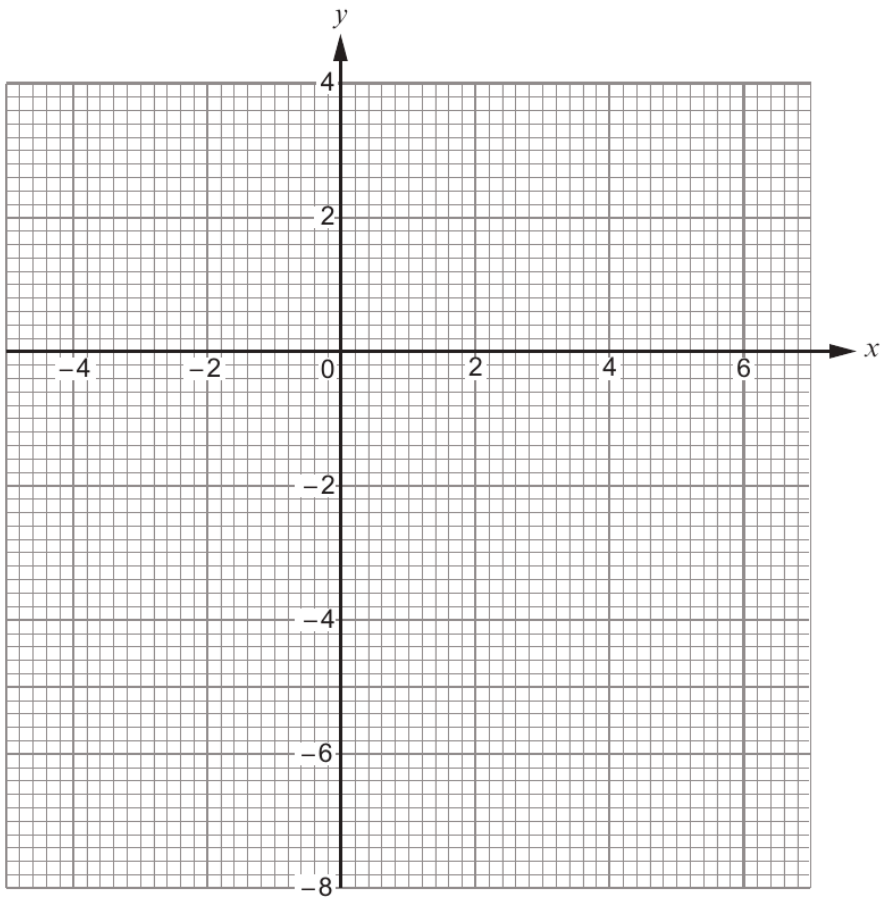
Examiner only

3. The table below shows some values of $y = x - 3$ for values of x from -4 to 6.

x	-4	-2	0	2	4	6
$y = x - 3$	-7		-3			3

(a) Complete the table above. [2]

(b) On the graph paper below, draw the graph of the straight line $y = x - 3$ for values of x **from -4 to 6 only**. [2]



Examiner only

12. The table below shows some values of $y = x - 3$ for values of x from -4 to 6.

x	-4	-2	0	2	4	6
$y = x - 3$	-7		-3			3

(a) Complete the table above. [2]

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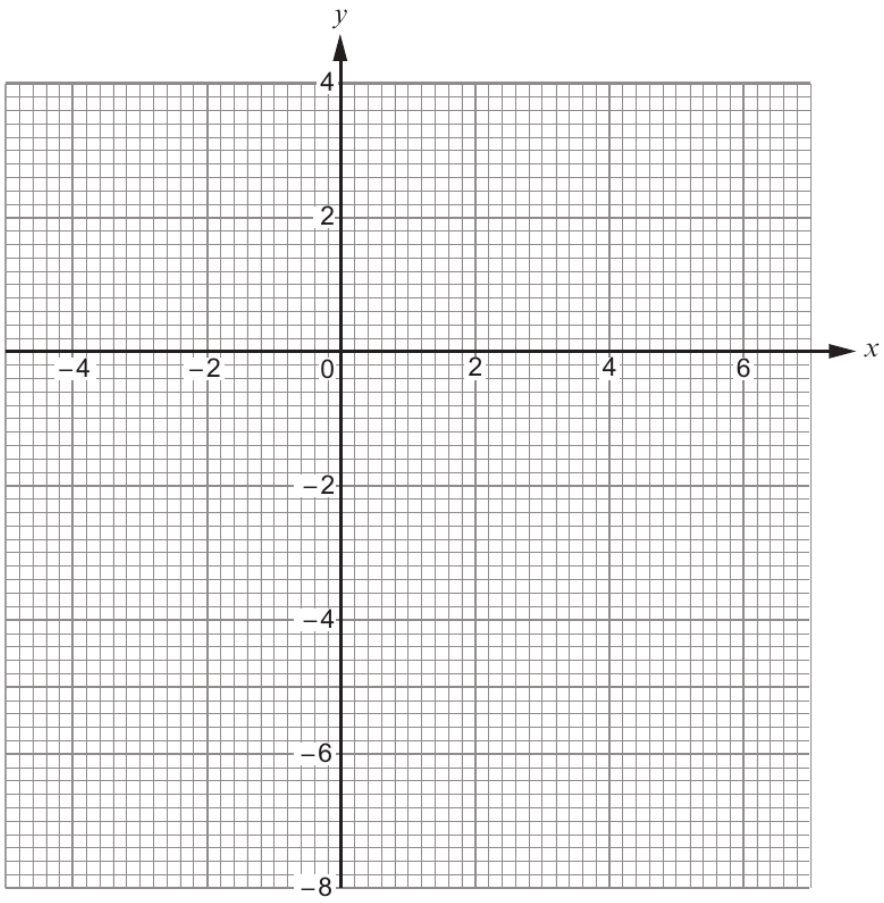
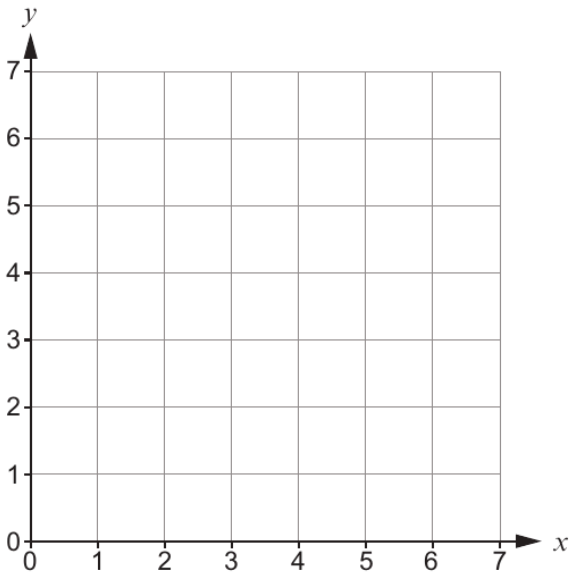
(b) On the graph paper below, draw the graph of the straight line $y = x - 3$ for values of x **from -4 to 6 only**. [2]



Examiner only

4. On the grid below, plot the point A (4, 6). [1]



3300U101
05

5. Measure the length of a **diagonal** of this rectangle.
Write down your answer in the space provided. [1]

Length of diagonal = ... cm

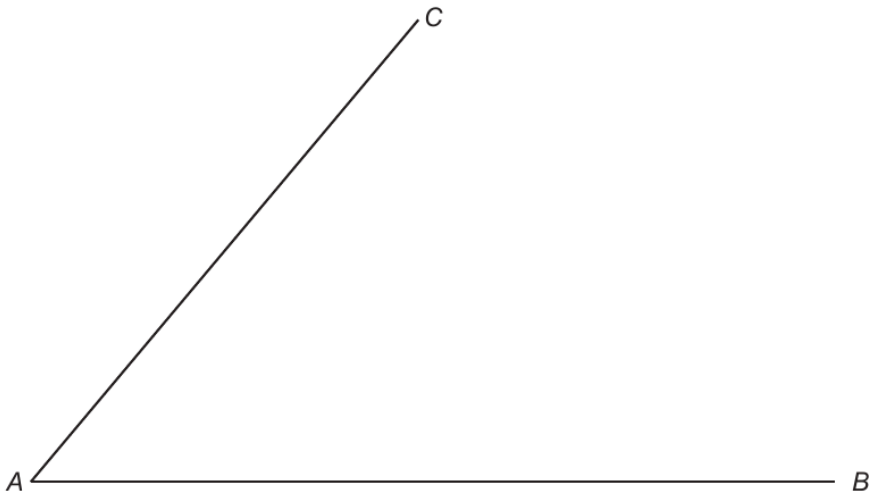
Examiner only

11. Two straight lines, *AB* and *AC*, are shown below.

The point *P* is

- equidistant from line *AB* and line *AC*,
- 6 cm from point *B*,
- **more** than 10 cm from point *A*.

Show clearly the position of point *P*. [3]



12. *(a)* Share £720 in the ratio 2 : 7. [2]

(b) Calculate the value of the reciprocal of 0·2. [2]

Examiner only

15. *(a)* What is the gradient of the straight line with equation $6y = 3x + 7$?
Circle the correct answer. [1]

$\frac{1}{2}$ 6 2 3 $\frac{7}{6}$

(b) What is the value of y at the point where the line $5x + y + 3 = 0$ crosses the y-axis?
Circle the correct answer. [1]

0 –5 3 –3 $\frac{5}{3}$

(c) What are the coordinates of the point where the lines with equations $x + y = 7$ and $x - y = 3$ intersect?
Circle the correct answer. [1]

(4, 3) (7, 4) (5, 2) (3, 7) (−5, 2)

Examiner only

3. *(a)* Write down the first 3 multiples of 47. [1]

(b) One of the numbers below is a factor of 676.
Circle the correct number. [1]

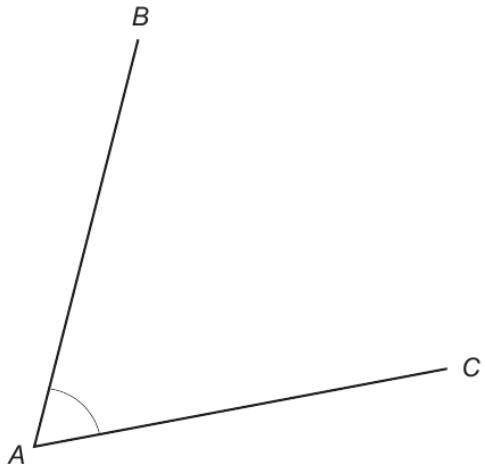
22 32 42 52 62

(c) When one of the numbers below is divided by 22, there is a remainder of 11.
Circle the correct number. [1]

208 209 210 211 212

Examiner only

8. *(a)* Measure $B\hat{A}C$. [1]



$B\hat{A}C$ = ... °

(b) One of the angles below is a reflex angle.
Circle the correct answer. [1]

45° 90° 135° 180° 225°

(c) The diagram below shows two angles on a straight line.
The large angle is 5 times the size of the small angle.
Find the size of each angle. [2]

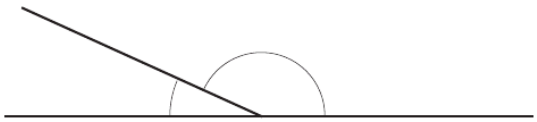


Diagram not drawn to scale

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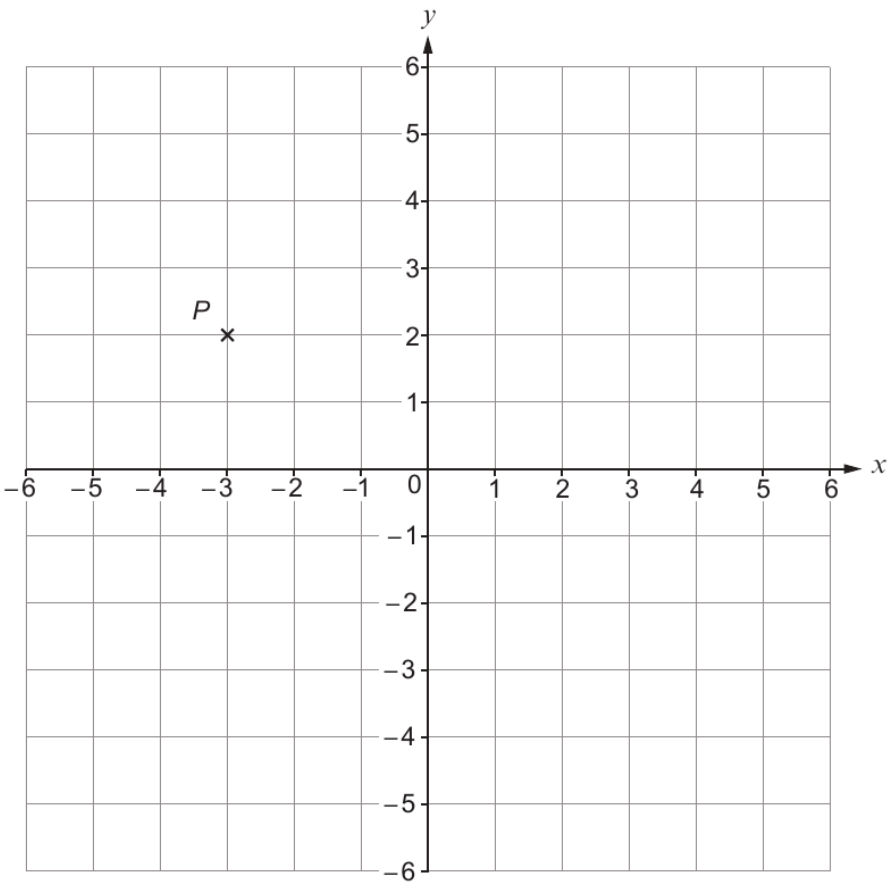
Small angle = ... ° Large angle = ... °

Examiner only

8. *(a)* On the grid below plot the point R (5, –2). [1]



(b) Write down the coordinates of point P, shown on the grid. [1]

(..... , ...)

9. Use the formula $T = 7A - B$ to find the value of T when $A = 43$ and $B = 26$. [2]

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Examiner only

6. Write down the next number in each of the following sequences.

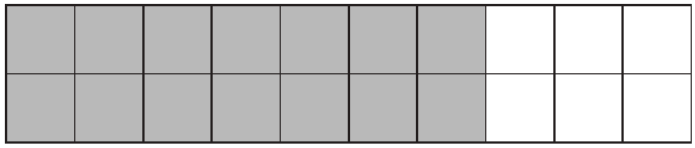
(a) 29, 35, 41, 47, ... [1]

.....

(b) 2000, 1000, 500, 250, ... [1]

.....

7. *(a)* What **percentage** of this diagram has been shaded? [1]



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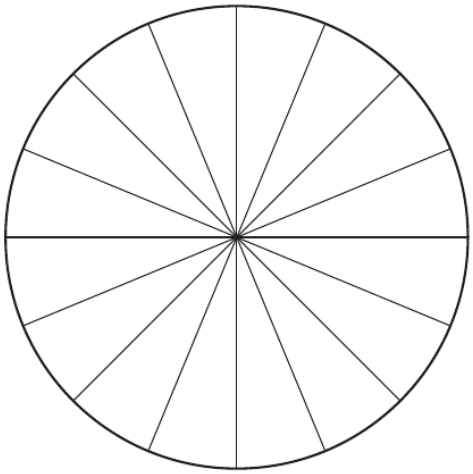
(b) Shade $\frac{3}{8}$ of this diagram. [1]



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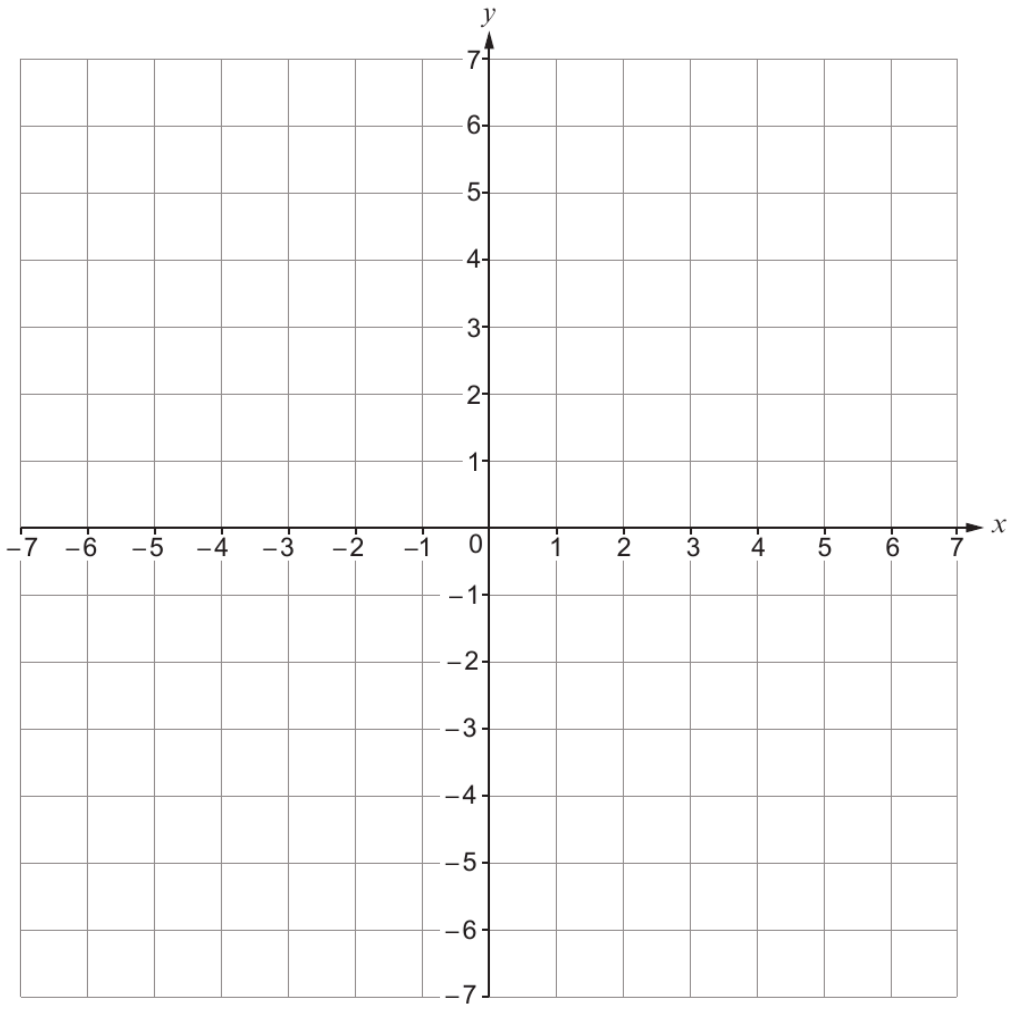
Examiner only

14. *(a)* Draw the line $x = -4$ on the grid below. [1]

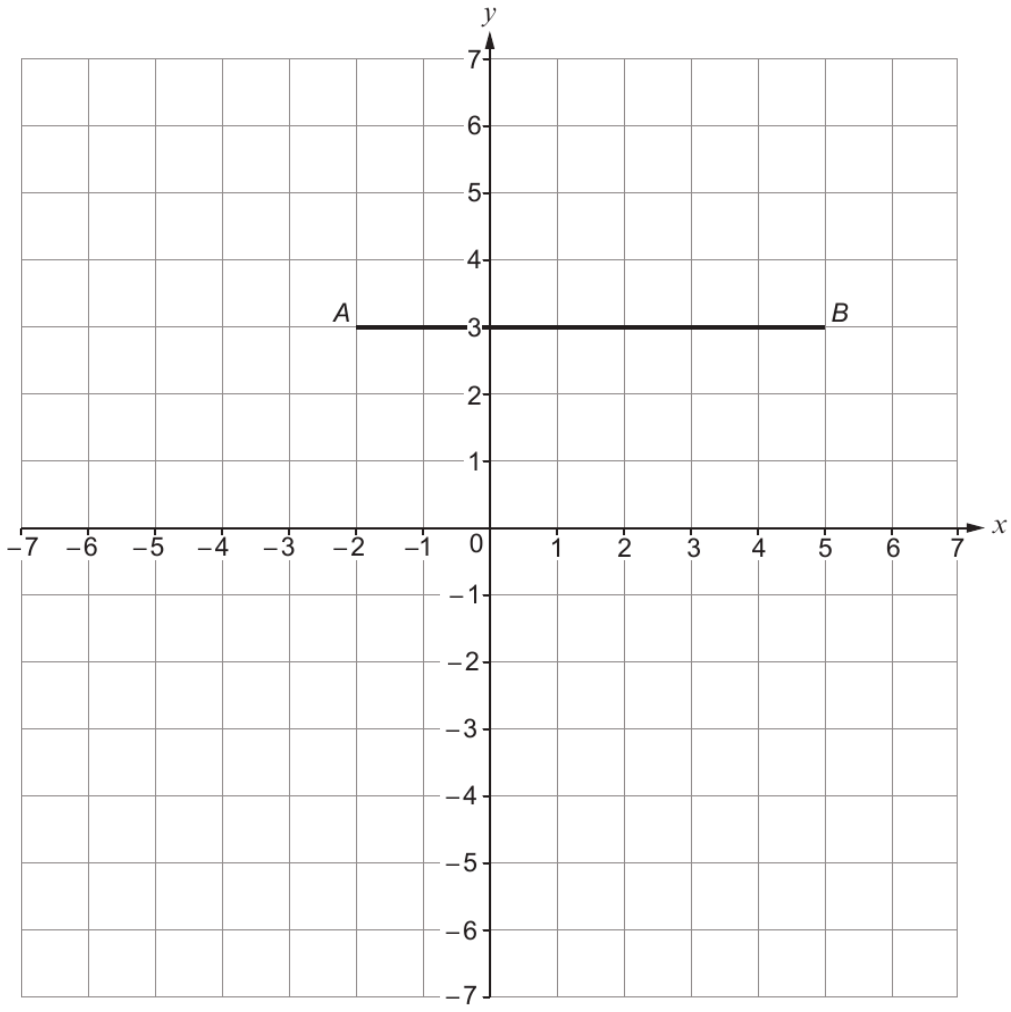


Examiner only

(b) *C* is a point on the grid below so that:

- $\widehat{BAC} = 90°$,
- $AC = AB$.

(i) Show the position of point *C* **on the grid**. [2]



(ii) Write down the coordinates of point *C*. [1]

.....

Examiner only

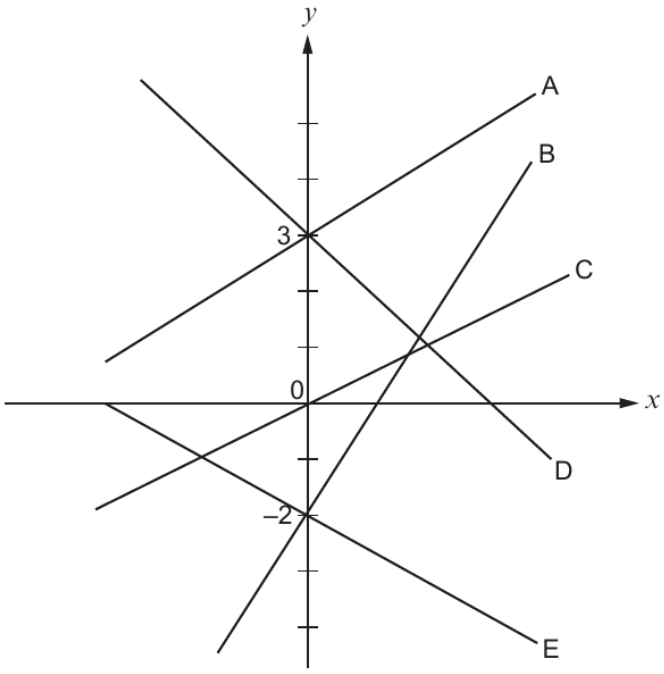
19. *(a)* Which one of the following equations represents a straight line that is parallel to the line $2y = 5x - 4$?
Circle your answer. [1]

$y = 2{\cdot}5x + 3$ $y = 5x - 2$ $y = 0{\cdot}4x - 4$ $y = -0{\cdot}4x - 2$ $2y = -5x + 4$

(b) Which one of the following equations represents a straight line that intersects the line $y = 7x - 5$ on the y-axis?
Circle your answer. [1]

$y = 7x + 5$ $y = 5 - 7x$ $y = 3x + 5$ $y = 0$ $y = 3x - 5$

(c)



Which one of the five straight lines shown above could represent the equation $y = -2x + 3$?
Circle your answer. [1]

Line A Line B Line C Line D Line E

END OF PAPER

Examiner only

9. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

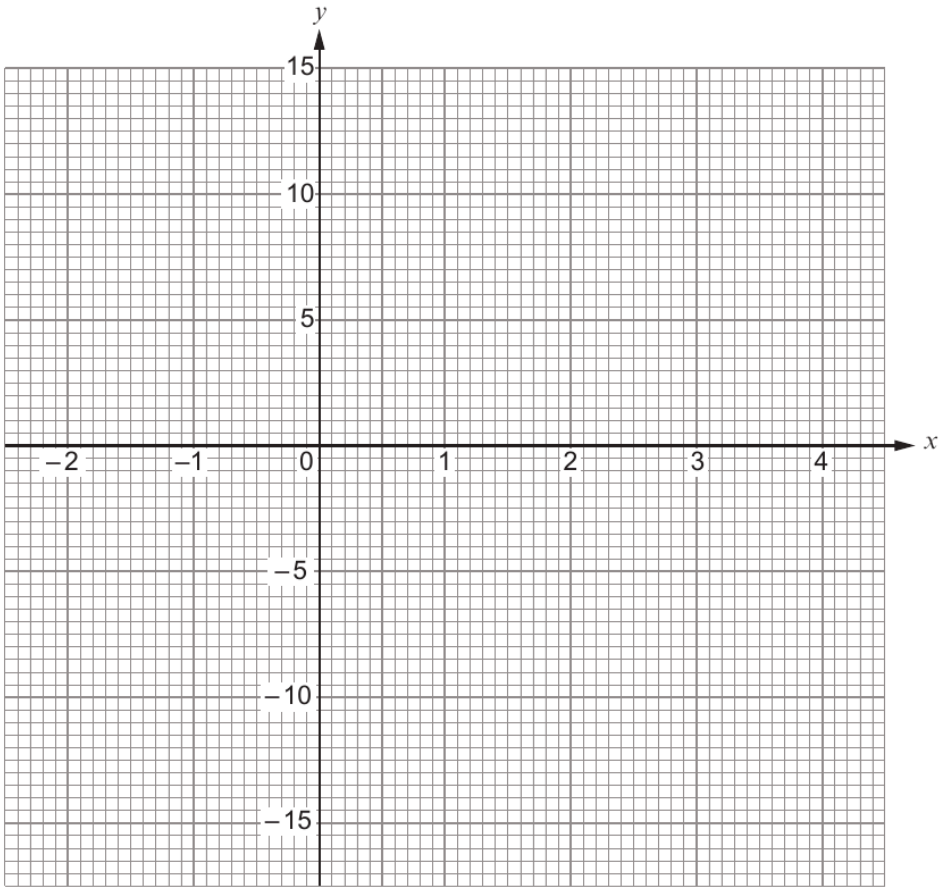
A rectangle has length 15 cm and width 7 cm.
A square has the same perimeter as this rectangle.

Calculate the length of a side of the square.
You must show all your working. [4 + 2 OCW]

Examiner only

12. Complete the table below.
Draw the graph of $y = 7 - x^2$ for values of x between −2 and 4.
Use the graph paper below. [4]

x	−2	−1	0	1	2	3	4
$y = 7 - x^2$	3		7	6	3		−9



Examiner only

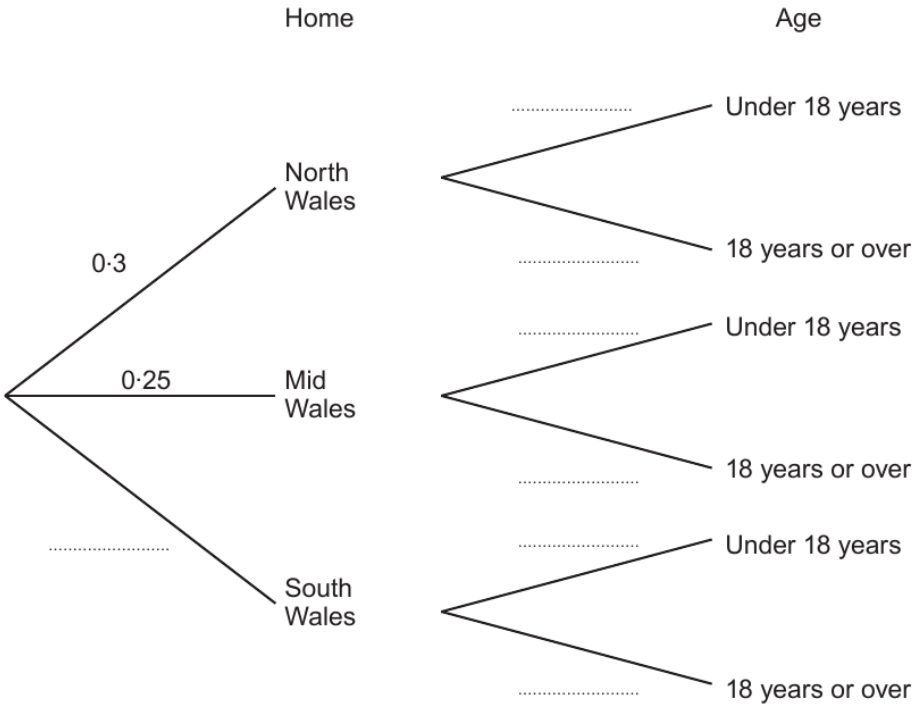
16. A group of people have put their names forward to carry the Welsh flag at a sporting event. Each person lives in North Wales, Mid Wales or South Wales.

One person from the group is chosen at random.
The probability of choosing a person who lives in North Wales is 0·3.
The probability of choosing a person who lives in Mid Wales is 0·25.

The probability of choosing a person who is under 18 years old is 0·2.

The people's ages are independent of where they live.

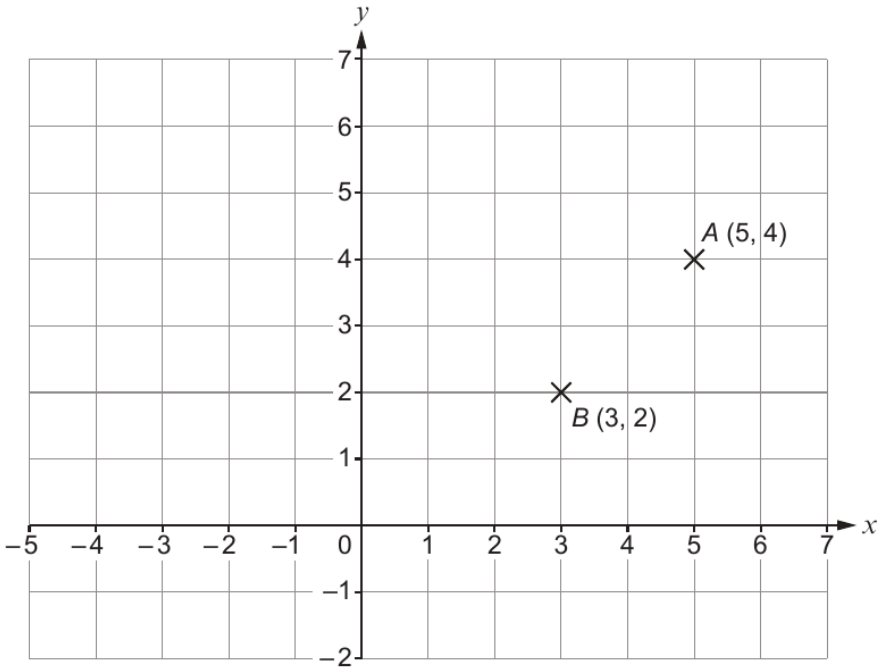
(a) Complete the tree diagram shown below. [3]



(b) What is the probability of choosing a person who lives in South Wales and is under 18 years old? [2]

Examiner only

2.



(a) *B* is the midpoint of the line *AC*.
Find the coordinates of *C*. [2]

.....

.....

C (..... , ...)

(b) *A* and *B* are two vertices of a right-angled triangle.
Point *D* is to be plotted on the grid above so that the triangle *ABD* is a right-angled triangle.
The x-coordinate of *D* is negative.
Give the coordinates of a possible position of the point *D* that can be plotted on the grid above. [2]

.....

.....

D (..... , ...)

Examiner only

5. (a) Elaine writes down two square numbers.

She subtracts the smaller square number from the larger square number.
Her answer is 9.

Which two square numbers did Elaine write down? [2]

.....

.....

.....

Elaine's square numbers are ..... and .....

(b) Dylan adds two odd numbers together and gets an answer of 37.

Could Dylan's answer be correct?

Yes ☐ No ☐ Can't tell ☐

Explain your reasoning. [1]

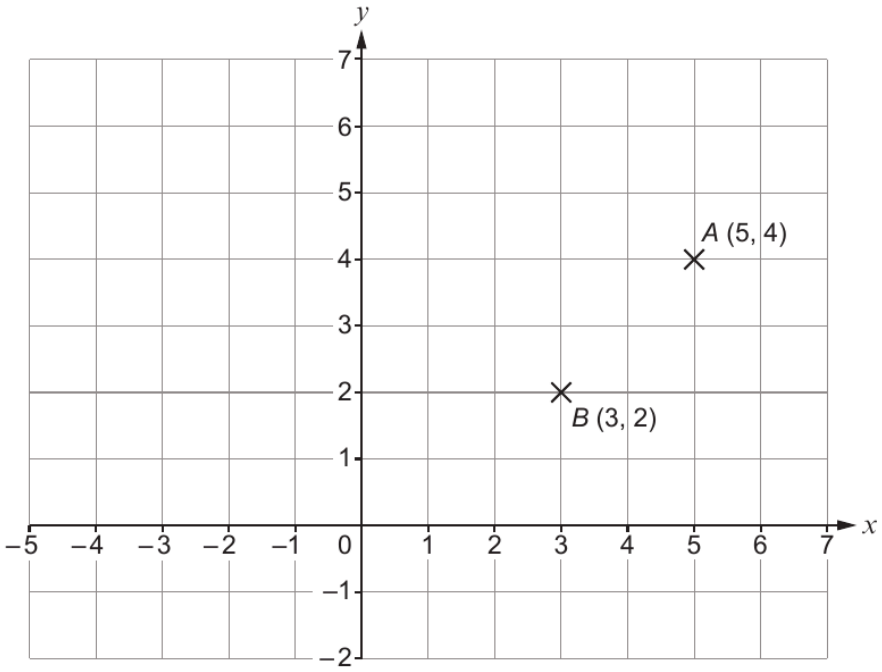
Reasoning: .....

.....

.....

Examiner only

12.



(a) *B* is the midpoint of the line *AC*.
Find the coordinates of *C*. [2]

.....

.....

C (..... , ...)

(b) *A* and *B* are two vertices of a right-angled triangle.
Point *D* is to be plotted on the grid above so that the triangle *ABD* is a right-angled triangle.
The x-coordinate of *D* is negative.
Give the coordinates of a possible position of the point *D* that can be plotted on the grid above. [2]

.....

.....

D (..... , ...)

Examiner only

12. *In this question, you will be assessed on the quality of your organisation and communication.*

In the diagram below, *AF* is a straight line.

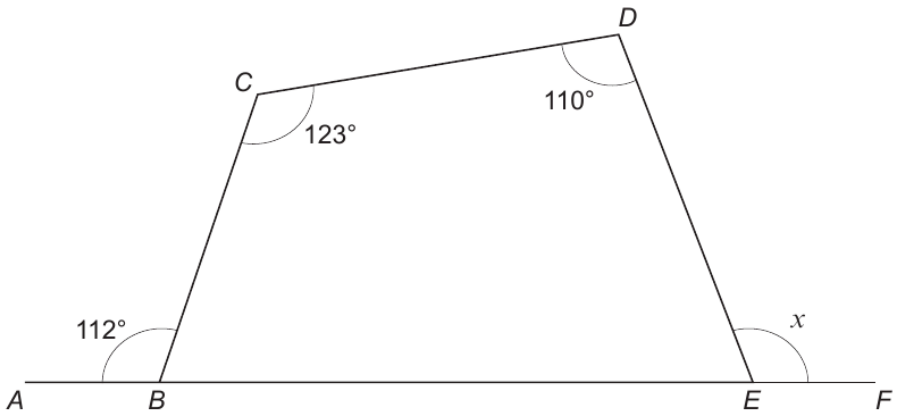
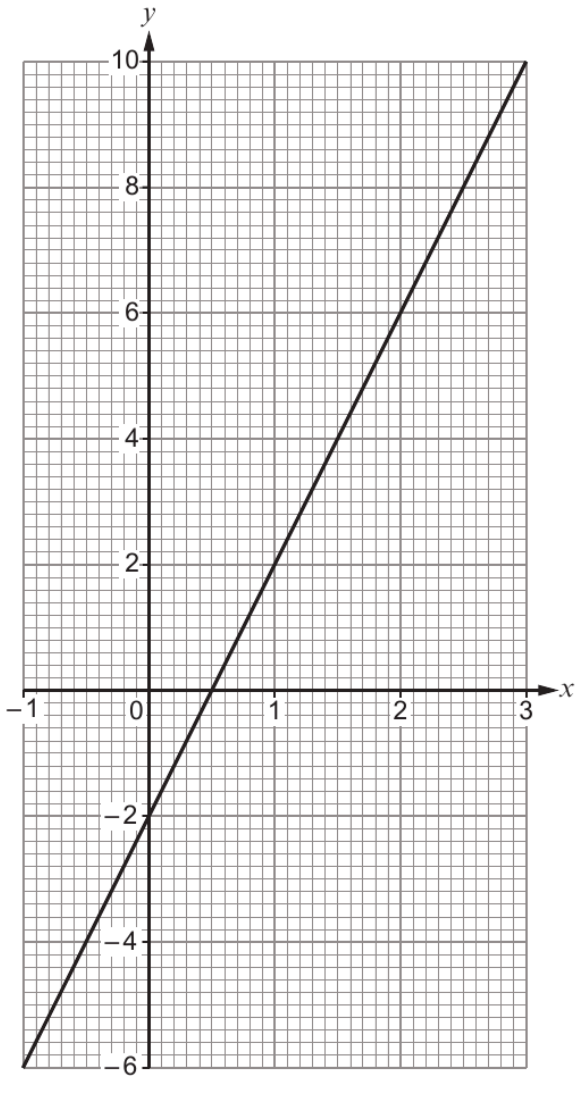


Diagram not drawn to scale

Calculate the size of angle x.
You must show all your working. [4 + 1 OC]

Examiner only

18. The diagram below shows the graph of a straight line for values of x from –1 to 3.



(a) (i) Write down the gradient of the line above. [1]

.....

.....

Examiner only

(ii) Write down the equation of the line in the form $y = mx + c$. [2]

(b) Show that the lines

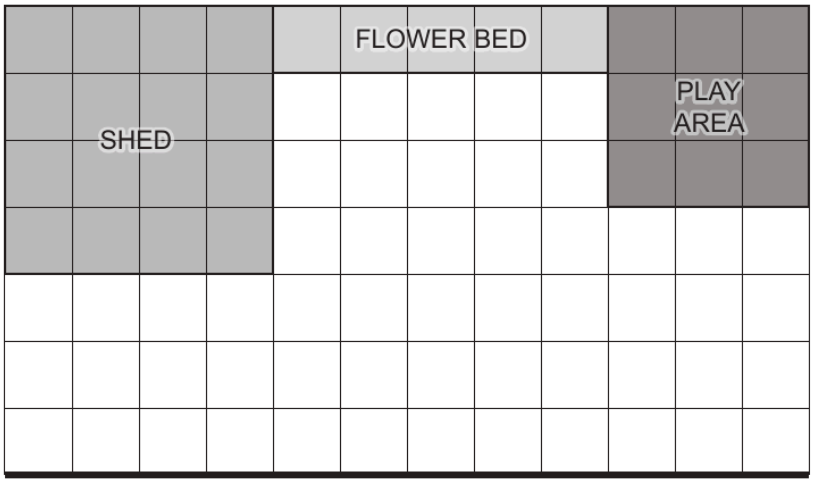
$$y = 3x - 8 \quad \text{and} \quad 2y - 6x = 23$$

are parallel to each other. [2]

Examiner only

1. The scale drawing below shows a plan of Amir's garden.
It shows the position of the shed, flower bed, play area and the back of the house.

Scale: 1 cm represents 1 m



BACK OF THE HOUSE

(a) Amir wants to put a hot tub in his garden.

The base of Amir's hot tub is rectangular.
It is 3 m long and 2 m wide.

(i) Amir wants the rectangular hot tub to be:
- at least 2 m from the back of the house
- at least 1 m from everything else.

Draw a possible position for the hot tub on the scale drawing above. [2]

.....

.....

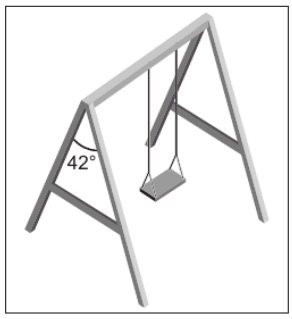
(ii) What is the area of the base of the hot tub?
Circle your answer. [1]

$6\,m^2$ $6\,m$ $5\,m^2$ $10\,m$ $10\,m^2$

.....

Examiner only

(b) Amir is building a swing for the play area.



The 2 long posts that meet at the top at each end of the swing need to be at an angle of 42°.

(i) What type of angle is 42°?
Circle your answer. [1]

an acute angle a right angle a straight line an obtuse angle a reflex angle

(ii) Amir is joining 2 long posts together.
One post is lying on horizontal ground.
Draw an angle of 42° at point T. [1]

T

(iii) Each long post makes an angle of 69° with the horizontal ground.
The diagram below shows one of these posts.
Calculate the size of angle x. [2]

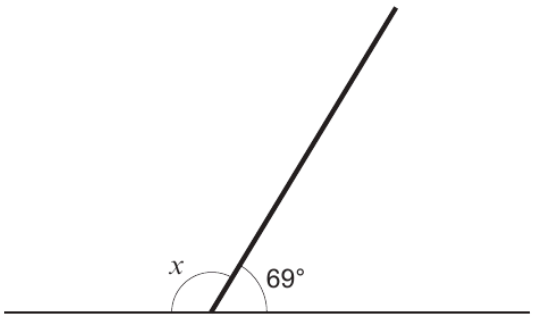


Diagram not drawn to scale

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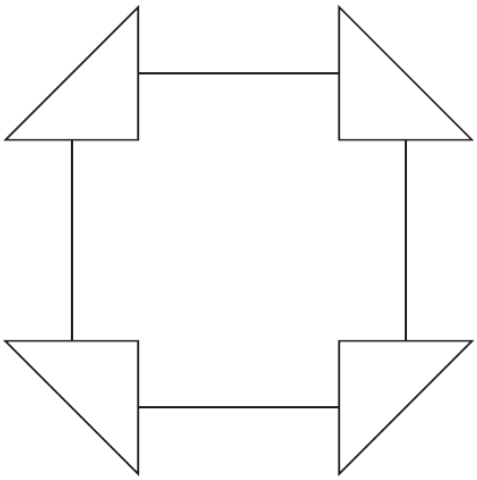
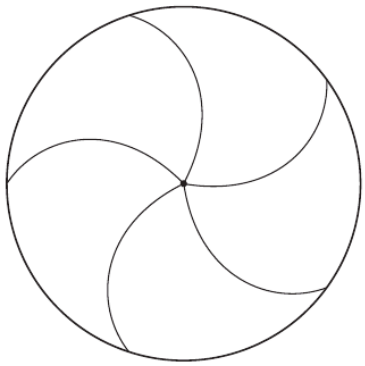
Examiner only

5. (a) Draw **all** the lines of symmetry on the shape below. [2]



(b) What is the order of rotational symmetry of the shape below? [1]



Order of rotational symmetry = ...

Examiner only

7. (a) Solve the following equations.

(i) $p + 17 = 29$ [1]

(ii) $52 - n = 38$ [1]

(b) How many centimetres are there in 24·8 metres? [1]

8.

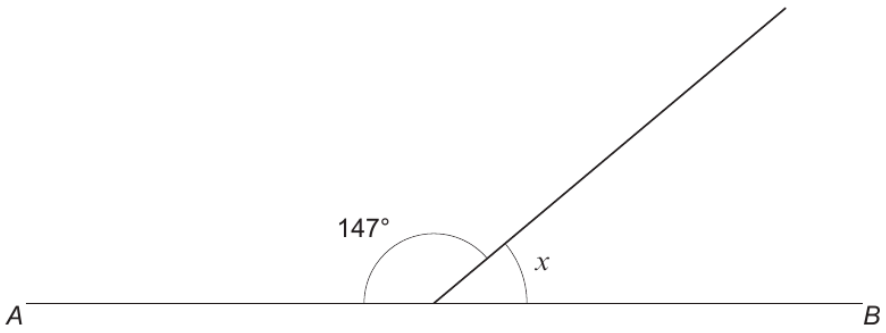


Diagram not drawn to scale

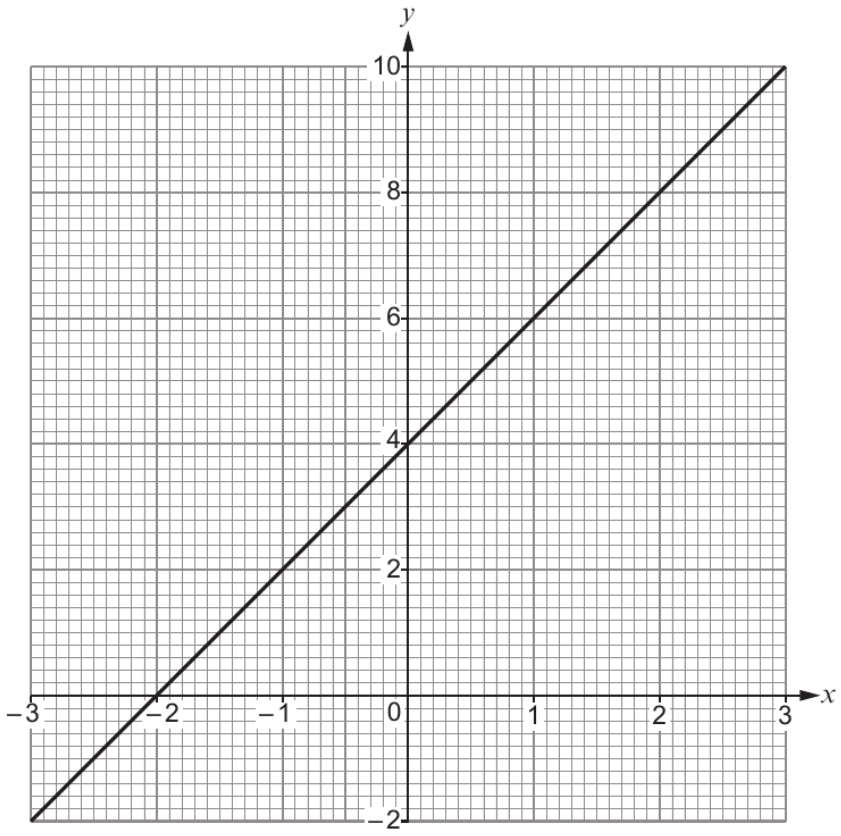
AB is a straight line.

Calculate the size of angle x. [2]

x = ... °

Examiner only

9. The diagram below shows the graph of the straight line $y = 2x + 4$ for values of x from –3 to 3.



(a) Draw the line $x = 2$ on the graph paper. [1]

(b) Write down the coordinates of the point where the lines $y = 2x + 4$ and $x = 2$ intersect. [1]

.....

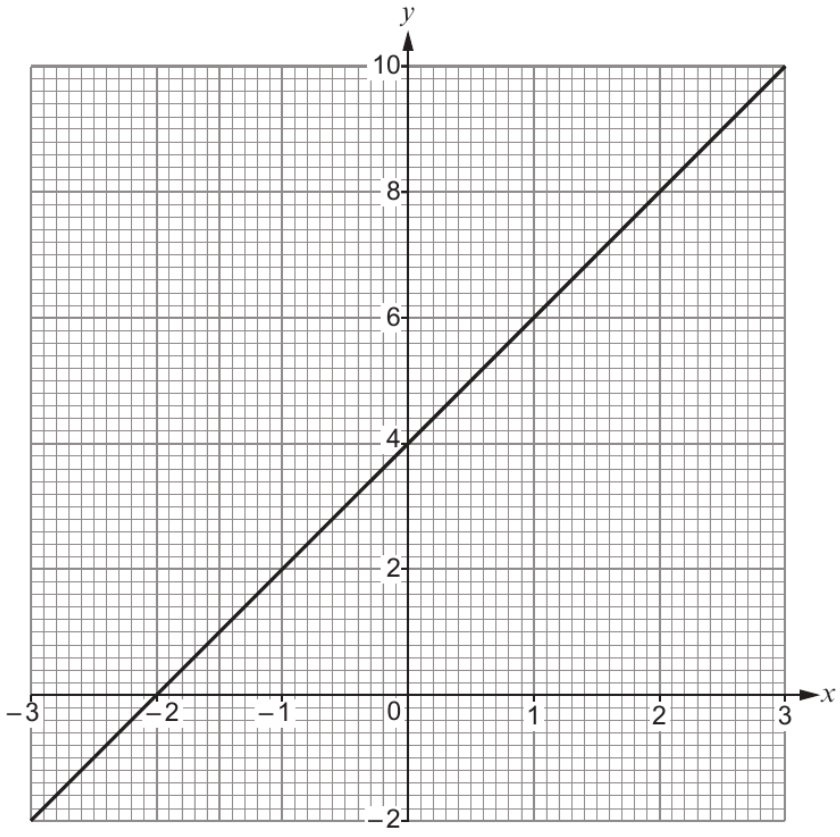
.....

.....

The coordinates of the point where $y = 2x + 4$ and $x = 2$ intersect = (..... , ...)

Examiner only

18. The diagram below shows the graph of the straight line $y = 2x + 4$ for values of x from –3 to 3.



(a) Draw the line $x = 2$ on the graph paper. [1]

(b) Write down the coordinates of the point where the lines $y = 2x + 4$ and $x = 2$ intersect. [1]

.....

.....

.....

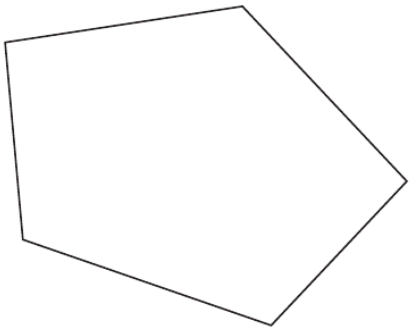
The coordinates of the point where $y = 2x + 4$ and $x = 2$ intersect = (..... , ...)

Examiner only

1. (a) Calculate 5620×100. [1]

(b) Write 42 861 correct to the nearest hundred. [1]

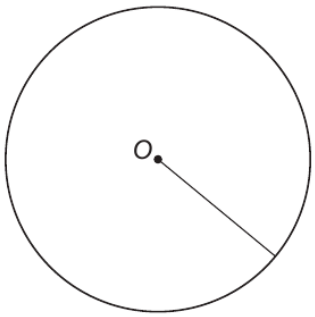
2. (a)



What is the special name of the shape shown above?
Circle your answer. [1]

pentagon hexagon kite parallelogram rhombus

(b)



O is the centre of the circle shown above.

What is the special name of the straight line shown in the diagram?
Circle your answer. [1]

circumference tangent diameter radius chord

Examiner only

15. The equation of a straight line is $y = -3x + 7$.

(a) What is the gradient of the line?
Circle the correct answer. [1]

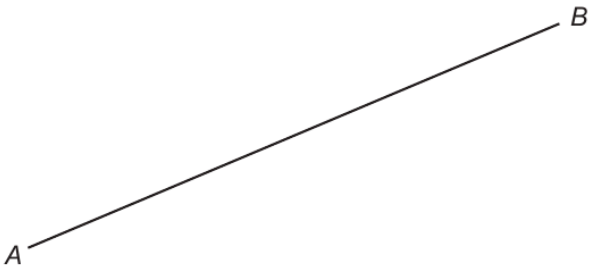
$\frac{1}{3}$ $-\frac{1}{3}$ 3 −3 7

(b) What are the coordinates of the point where the line intersects the y-axis?
Circle the correct answer. [1]

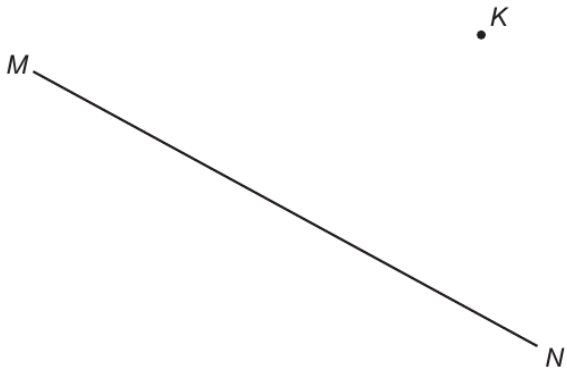
(−3, 7) (0, −3) (0, 3) (0, −7) (0, 7)

Examiner only

1. (a) Put a cross (X) at the midpoint of *AB*. [1]



(b) Draw a line through the point *K* that is perpendicular to *MN*. [1]



Examiner only

8. Use the formula $T = 4A + 8B$ to find the value of T when A = 45 and B = 19. [2]

9. (a) Tomos wants to find the median of the numbers below.

7 1 20 14 11

He writes the answer 20.

Explain why Tomos's answer is incorrect. [1]

(b) Ted writes down five numbers:

59 89 77 31 83

(i) Calculate the mean of Ted's numbers. [3]

(ii) Every number in Ted's list is decreased by 3.
What is the mean of the numbers in his new list? [1]

Examiner only

15. Three of the four vertices of a parallelogram have the following coordinates.

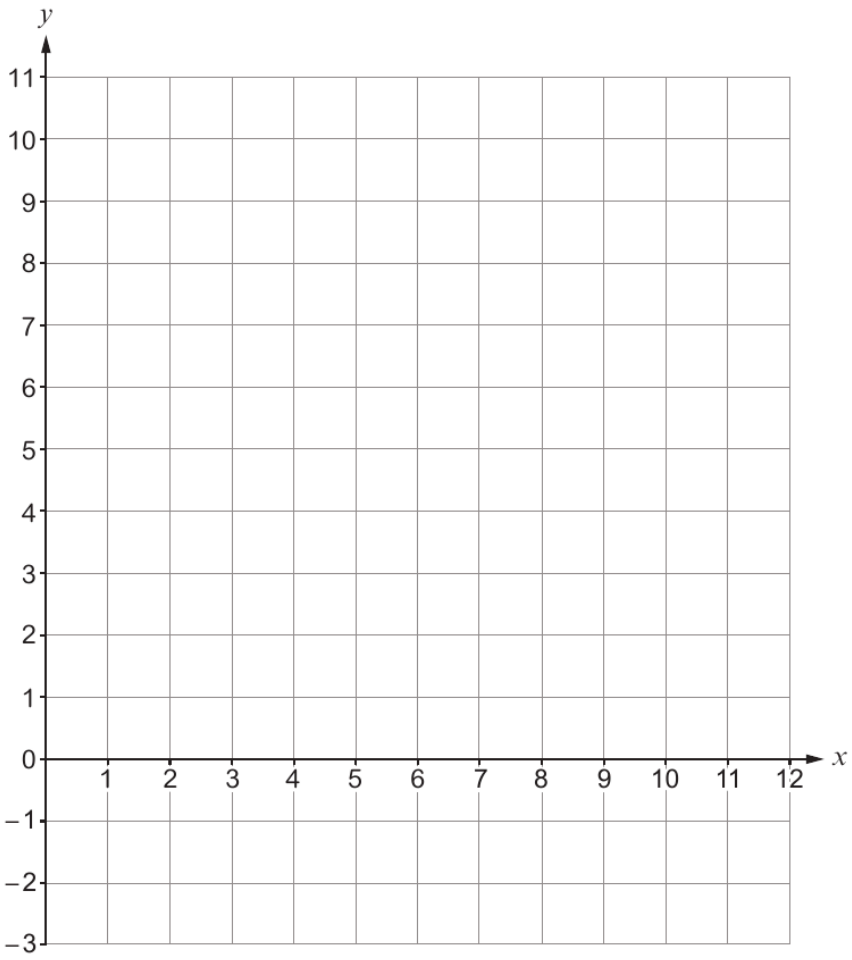
(4, 3) (5, –1) (8, 3)

Plot these points on the coordinate grid below.

Then, plot **all three** possible points for the fourth vertex.
Write down the coordinates of these three points. [4]

.....

.....



The **three** possible points for the fourth vertex are

(..... , ...) (..... , ...) (..... , ...)

Examiner only

15. Line AB is drawn below.
Point C lies **below** the line AB.
The region in which point C is located is such that:

- $A\hat{B}C \leqslant 30°$
- line $BC \leqslant 5\,\text{cm}$.

Use a ruler and a pair of compasses to **construct** suitable arcs and lines to show this region.
You must show your construction arcs.
Shade the region in which point C is located. [4]