THIRD SPACE LEARNING

Mathematics Paper 2 (Calculator) Higher Tier

Edexcel GCSE

SET 5

For teachers

Students are marking a completed paper rather than sitting it, so there is no time limit. Use the separate mark scheme to check their decisions and the marks they award.

- **Whole class:** display a page and mark it together, pausing to discuss each error.
- **In pairs:** one student marks while the other checks against the mark scheme, then they swap.
- **Independent revision or intervention:** students answer the questions themselves first, or focus on the topics they need to revisit.

This paper is based on the topics in the advance information for the November 2026 exam series. It is not possible to predict the content of the real exams, so students should continue to revise the full specification.

Instructions

A student has sat this practice paper. Some of their answers are correct, but others contain mistakes – in the method, the working or the final answer.

Work through the paper as if you were the examiner:

- Decide whether each answer is correct or incorrect.
- For each incorrect answer, find the point where the mistake happens and explain what went wrong.
- Write out the correct working and answer.
- Use the mark scheme to check your decisions and award the marks the student would have earned.

Not every answer is wrong, so be ready to explain why a correct answer is correct.

Mathematics Paper 2 (Calculator) Higher Tier Edexcel GCSE SET 5

Name

Total marks

Paper length: 1hr 30mins



Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	

Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may be used.

Information

- The total mark for this paper is 80
- The marks for each question are shown in brackets – use this as a guide as to how much time to spend on each question.

Advice

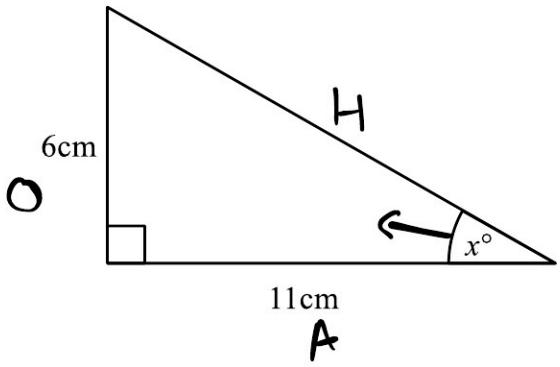
- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

This practice paper is based on the topics from the **advanced information for the November 2026 exam series.**

Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers

1





Work out the value of x

Give your answer correct to 3 significant figures.

$T = \frac{O}{A}$

$\text{Tan}(x) = \frac{6}{11}$

$x = \text{Tan}\left(\frac{6}{11}\right)$

$x = 0.00952027\ldots$

0.00952 °

(Total for Question 1 is 2 marks)

---

2 **(a)** Find the reciprocal of 0.4

$\frac{1}{0.4}$

(1)

(b) $x = 5.3$ to 2 significant figures.

Complete the error interval for x

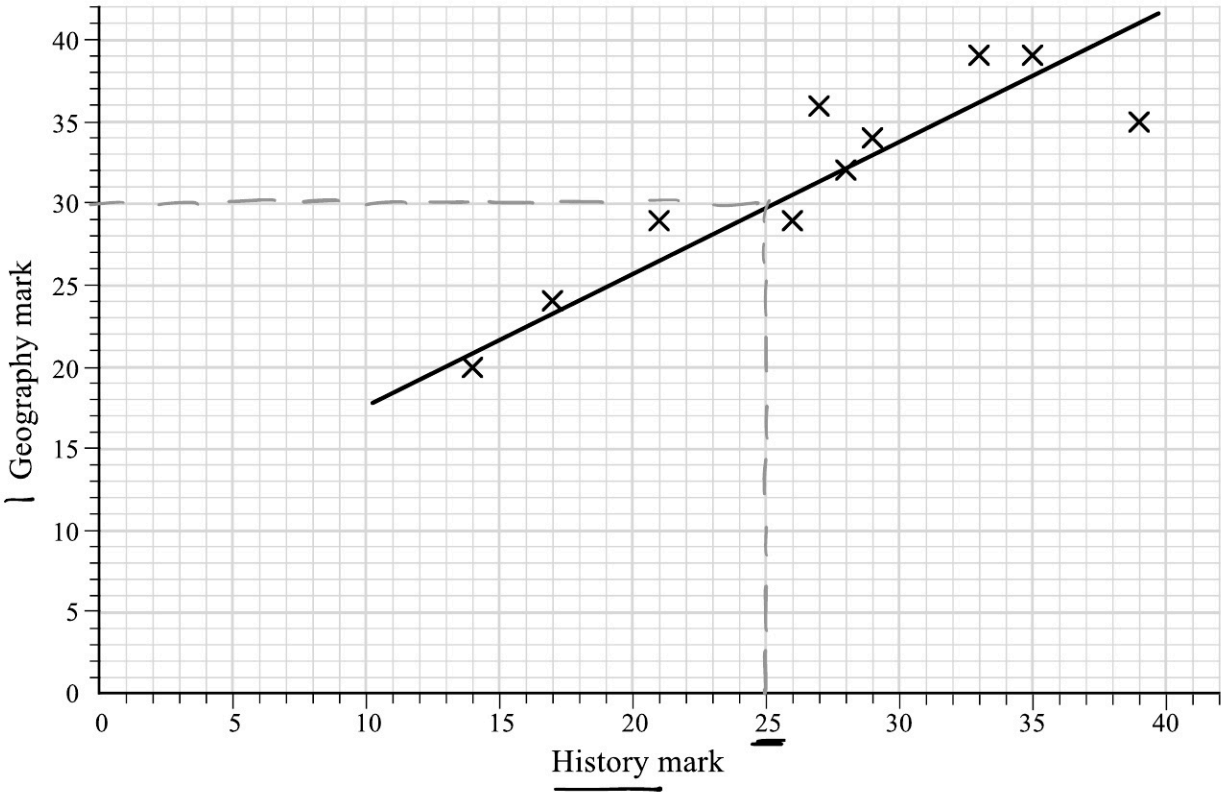
$5.2 \leq x < 5.4$

(2)

(Total for Question 2 is 3 marks)

© Third Space Learning 2026. You may photocopy this page.

3 The scatter diagram shows the history and geography marks of 10 students in their recent tests.



(a) Describe the relationship between students' marks in the history test and the geography test.

Positive correlation

(1)

(b) Another student scored 25 in the history test.

Use the graph to estimate this student's score in the geography test.

30

(2)

(c) Both tests were out of 40. Which test do you think was easier? Explain why.

Geography seems easier

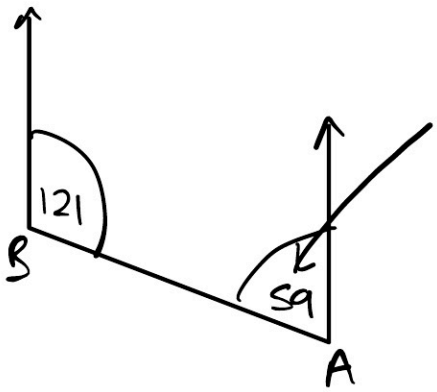
(2)

(Total for Question 3 is 5 marks)

© Third Space Learning 2026. You may photocopy this page.

4 The bearing of A from B is 121°.

What is the bearing of B from A?



180 - 121 = 59

59

(Total for Question 4 is 2 marks)

---

5 Frankie invests £7000 in a bank account.

Frankie gets 6% per annum compound interest.

After n years, Frankie has £9367.58

Work out the value of n

100 + 6% = 1.06

n = 4

$7000 \times 1.06^4 = £8837.34$

n = 5

$7000 \times 1.06^5 = £9367.58$

5

(Total for Question 5 is 2 marks)

© Third Space Learning 2026. You may photocopy this page.

6 **(a)** Use your calculator to work out $\dfrac{\sqrt[3]{1.4^2+\tan(30)}}{0.91}$

Write down all of the values on your calculator display.

$\sqrt[3]{(1.4^2 + \tan(30))} = 1.363934374$

1.498828982

(2)

(b) Round your answer to 3 significant figures.

1.498828...

1.49

(1)

(Total for Question 6 is 3 marks)

---

7 The points A, B and C form a straight line ABC.

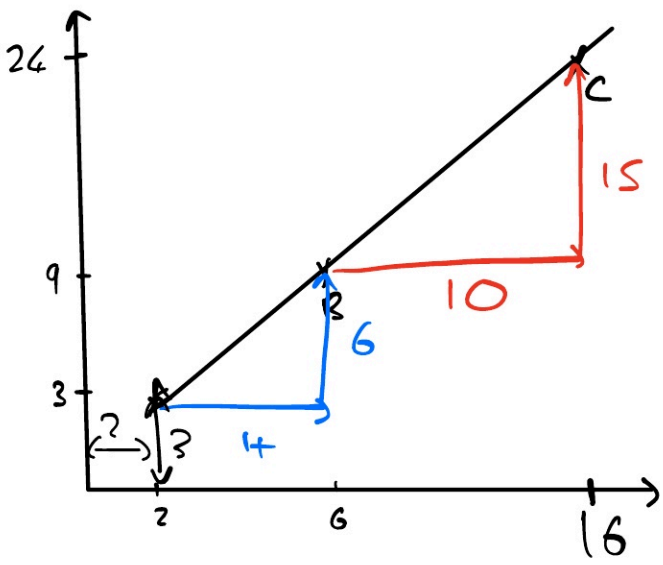
The coordinates of A are (2, 3)

The coordinates of B are (6, 9)

Given that $AB:BC = 2:5$, find the coordinates of C.

A to B = $\begin{pmatrix}4\\6\end{pmatrix}$

B to C = $\begin{pmatrix}10\\15\end{pmatrix}$

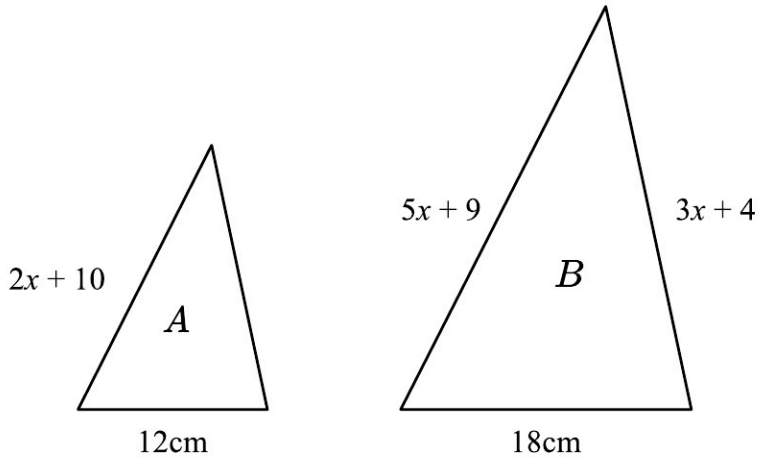


(10, 15)

(Total for Question 7 is 4 marks)

© Third Space Learning 2026. You may photocopy this page.

8 Triangles A and B are similar triangles.



Work out the perimeter of triangle B.

$SF = \frac{18}{12} = 1.5$

$1.5(2x+10) = 5x+9$

$3x + 15 = 5x + 9$

$15 = 2x + 9$

$6 = 2x$

$3 = x$

Perimeter $= 5x+9 + 3x+4+18$

$= 8x + 31$

$8x + 31$

(Total for Question 8 is 5 marks)

© Third Space Learning 2026. You may photocopy this page.

9 The grouped frequency table gives information about the time taken for 80 swimmers to swim 100 metres.

Time, t seconds	Frequency
$60 \leq t < 90$	7
$80 \leq t < 120$	14
$110 \leq t < 150$	23
$140 \leq t < 180$	27
$170 \leq t < 210$	9

(a) Complete the cumulative frequency table.

Time, t seconds	Cumulative frequency
$60 \leq t < 90$	7
$60 \leq t < 120$	21
$60 \leq t < 150$	44
$60 \leq t < 180$	71
$60 \leq t < 210$	80

(1)

(b) On the grid opposite, draw a cumulative frequency graph for this information.

(2)

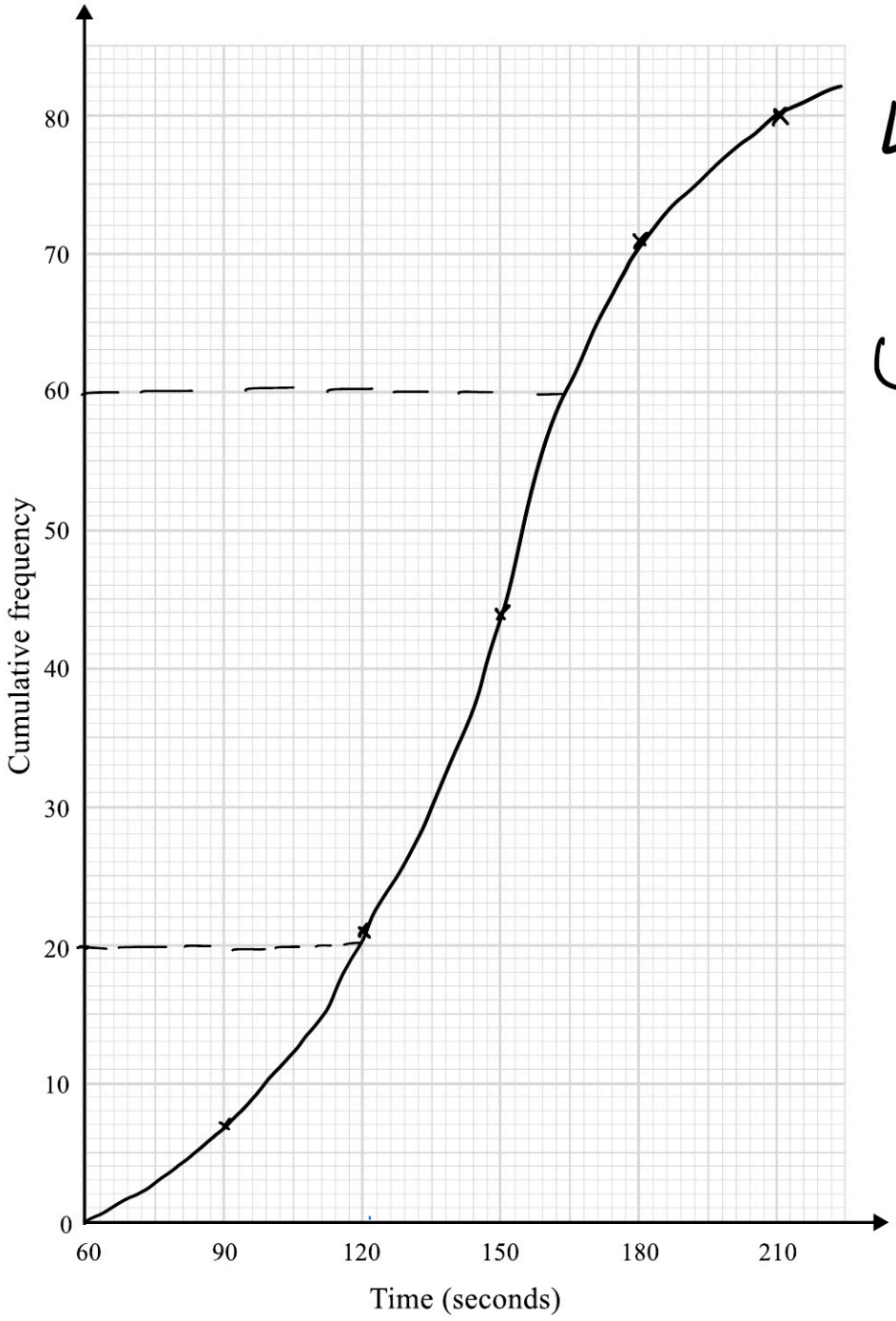
© Third Space Learning 2026. You may photocopy this page.

(c) Use your graph to find an estimate for the interquartile range.

IQR = UQ − LQ
= 60 − 20

40

(2)



LQ = $\frac{1}{4}$ of 80
= 20

UQ = $\frac{3}{4}$ of 80
= 60

(Total for Question 9 is 5 marks)

© Third Space Learning 2026. You may photocopy this page.

10 Amina has a pack of playing cards. However, some of the cards are missing.

Amina is going to pick a card at random.

The probability that she picks a card from each suit is shown in the table.

Suit	Heart	Club	Diamond	Spade
Probability	0.25	0.275	0·325	0·15

(a) Given that Amina has 10 heart cards, work out how many cards Amina has in total.

prob. of 10 heart hearts cards = 0·25 ×4

×4 ↳ 40 = 1 ↲ ×4

40

(2)

(b) Amina has all 13 diamond cards.

Complete the table.

$\frac{13}{40} = 0.325$

1 − 0·25 − 0·275

− 0·325

= 0·15

(2)

(c) Amina designs a game. To win the game, the player must draw a club.

A full pack of cards contains 52 cards, 13 of each suit.

Amina says that it is more likely that a player will win if they use her pack of cards than if they use a full pack of cards. Is Amina correct? Explain your answer.

$\frac{13}{52} = 0.25$ which is less the 0·275.

(2)

(Total for Question 10 is 6 marks)

© Third Space Learning 2026. You may photocopy this page.

11 Expand and simplify $(2x + 1)(x - 5)(3x + 2)$

$(2x+1)(x-5)$

$2x^2 - 10x + x - 5$

$= 2x^2 - 9x - 5$

$2x^2 - 9x - 5 + 3x + 2$

$= 2x^2 - 6x - 3$

$2x^2 - 6x - 3$

(Total for Question 11 is 3 marks)

---

12 The equation of line L_1 is $y = 3x - 7$

The equation of line L_2 is $3y + x = 1$

Show that lines L_1 and L_2 are perpendicular.

$y = mx + c$

$L_1: y = 3x - 7$

$m = 3$

$3 + -\frac{1}{3} = 2\frac{2}{3}$,

$L_2: 3y + x = 1$

$3y = -x + 1$

$y = -\frac{1}{3}x + \frac{1}{3}$

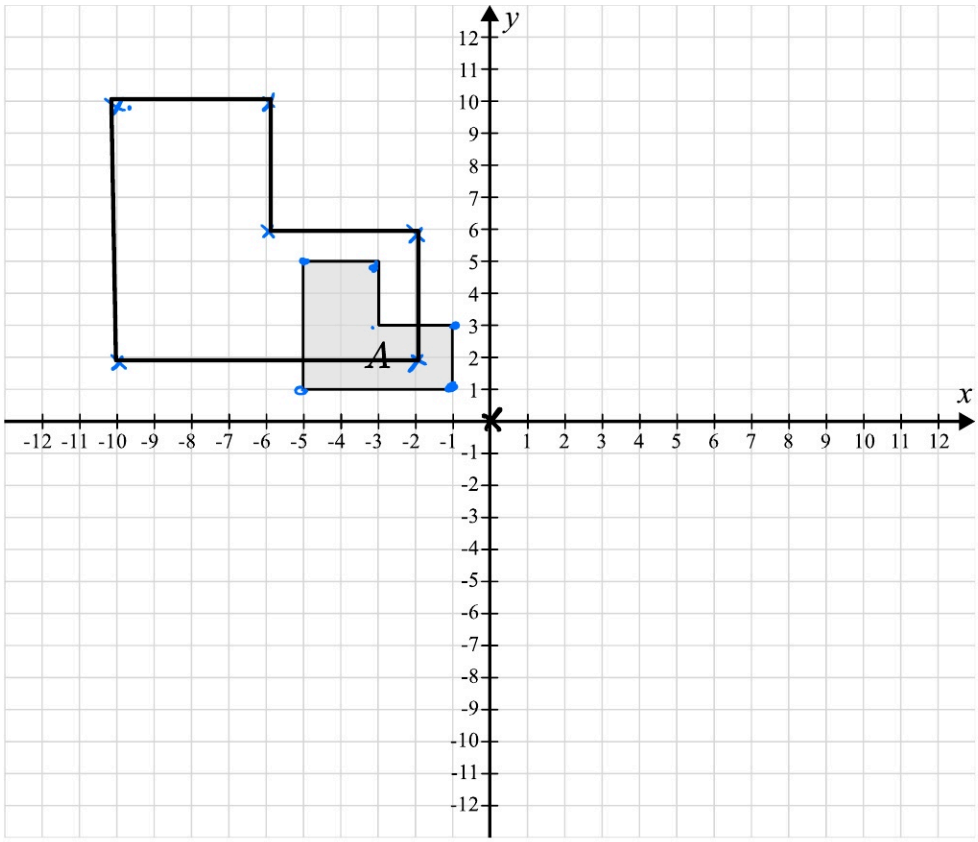
$m = -\frac{1}{3}$

So the lines are not perpendicular

(Total for Question 12 is 2 marks)

© Third Space Learning 2026. You may photocopy this page.

13



Enlarge shape A by scale factor -2 from the centre $(0, 0)$.

(Total for Question 13 is 2 marks)

© Third Space Learning 2026. You may photocopy this page.

14 The price of a piece of furniture in London is £345

The price of the furniture in Venice is €360

The price of the furniture in New York is $385

The exchange rates are:

£1 = €1.16

£1 = $1.37

In which city is the furniture the most expensive?

Show how you decide.

÷1·16

£1 = €1·16

÷1·37

£1 = $1.37

London: £345

Venice : €360 ÷ 1·16

= £310·34

New York: $385 ÷ 1·37

= £281·02

(Total for Question 14 is 3 marks)

15 A circle's radius is increased by 12%.

Find the % increase in the circle's area.

100% + 12% = 1·12

1·12 %

(Total for Question 15 is 3 marks)

© Third Space Learning 2026. You may photocopy this page.

16 **(a)** Show that the equation $x^3 - 2x^2 - 1 = 0$ has a solution between $x = 2$ and $x = 3$

$x=2$

$2^3 - 2(2^2) - 1 = -1$

$x=3$

$3^3 - 2(3^2) - 1 = 8$

Change of sign shows there is a solution between $x=2$ and $x=3$.

(2)

(b) Show that the equation $x^3 - 2x^2 - 1 = 0$ can be written in the form $x = \sqrt[3]{2x^2 + 1}$

$x^3 - 2x^2 - 1 = 0$

$+2x^2$ $+1$ $+2x$ $+1$

$x^3 = 2x^2 + 1$

$x = \sqrt[3]{2x^2 + 1}$

(1)

(c) Starting with $x_0 = 2.5$, use the iterative formula $x_{n+1} = \sqrt[3]{2x_n^2 + 1}$ four times to find an estimate for the solution of $x^3 - 2x^2 - 1 = 0$

Give each value to 4 decimal places.

$x_0 = 2.5$

$x_1 = \sqrt[3]{2(2.5^2) + 1} = 2.3811$

$x_2 = \sqrt[3]{2(2.3811^2) + 1} = 2.3108$

$x_3 = 2.2689$

(3)

(Total for Question 16 is 6 marks)

© Third Space Learning 2026. You may photocopy this page.

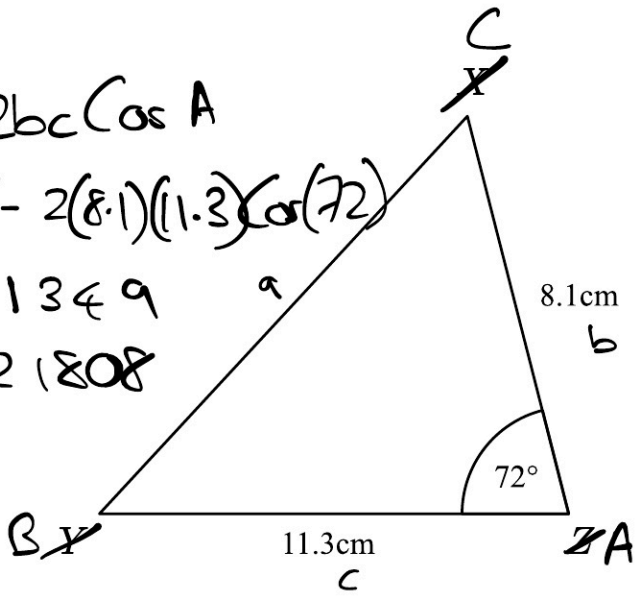
17 Here is a triangle.

$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 8.1^2 + 11.3^2 - 2(8.1)(11.3)\cos(72)$

$a^2 = 136.731349$

$a = 11.6932808$



(a) Work out the length XY.

Give your answer to 3 significant figures.

11.7 cm

(3)

(b) Work out the area of triangle XYZ.

Give your answer to 3 significant figures.

Area of triangle $= \frac{1}{2} \times \text{base} \times \text{height}$

$= \frac{1}{2} \times 11.3 \times 8.1$

$= 45.765$

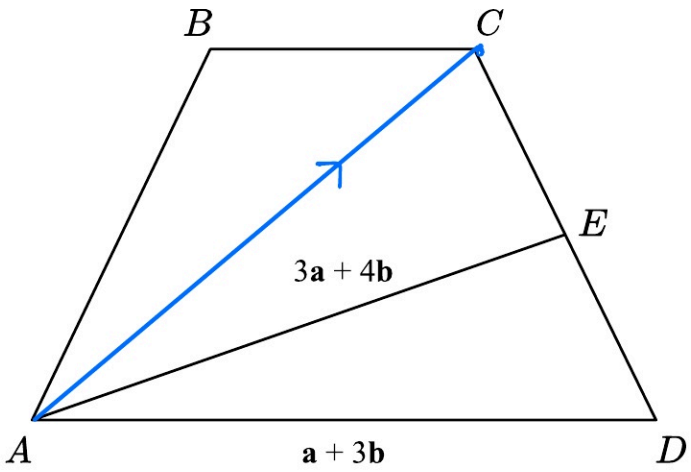
45.8 cm^2

(2)

(Total for Question 17 is 5 marks)

© Third Space Learning 2026. You may photocopy this page.

18



$\overrightarrow{AD} = \mathbf{a} + 3\mathbf{b}$

$\overrightarrow{AE} = 3\mathbf{a} + 4\mathbf{b}$

$CE : ED = 5 : 4$

Express $\overrightarrow{AC}$ in terms of **a** and **b**.

Give your answer in its simplest form.

$\overrightarrow{AC} = \overrightarrow{AD} + \overrightarrow{DC}$

$\overrightarrow{AC} = \underline{a} + 3\underline{b}$

$\overrightarrow{DE} = \overrightarrow{DA} + \overrightarrow{AE}$

$= -\underline{a} - 3\underline{b}$

$+ 3\underline{a} + 4\underline{b}$

$= 2\underline{a} + \underline{b}$

$\overrightarrow{DC} = \frac{1}{4}(2\underline{a} + \underline{b})$

$+ \frac{1}{2}\underline{a} + \frac{1}{4}\underline{b}$

$= \frac{1}{2}\underline{a} + \frac{1}{4}\underline{b}$

$= \frac{11}{2}\underline{a} + \frac{21}{4}\underline{b}$

(Total for Question 18 is 4 marks)

© Third Space Learning 2026. You may photocopy this page.

19 **(a)** Write $11 + 12x - 2x^2$ in the form $a - b(x - c)^2$ where a, b and c are integers.

$11 + 12x - 2x^2$

$-2x^2 + 12x + 11$

$-2[x^2 - 6x] + 11$

$-2[(x-3)^2 - 9] + 11$

$-2(x-3)^2 - 9 + 11$

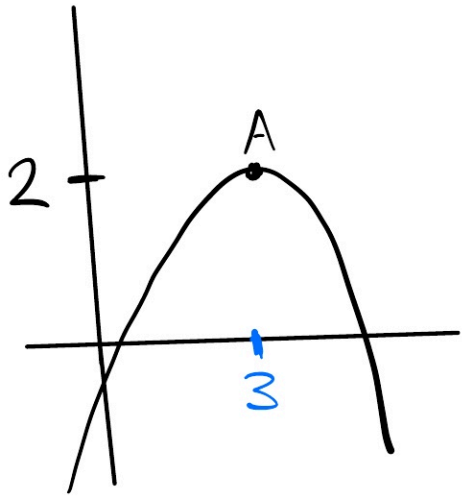
$= -2(x-3)^2 + 2$

(3)

(b) C is the curve with equation $y = 11 + 12x - 2x^2$

A is the maximum point of C.

Use your answer to a to write down the coordinates of point A.



$y = -2(x-3)^2 + 2$

0

$= 0 + 2$

$= 2$

$(x-3)^2 = 0$

$x - 3 = 0$

$x = 3$

(3 , 2)

1)

(Total for Question 19 is 4 marks)

© Third Space Learning 2026. You may photocopy this page.

20 Show that $\frac{1+\sqrt{9a}}{b-\sqrt{4a}}$ can be written in the form $\frac{m+n\sqrt{a}}{p}$,

where n, m and p are expressions in terms of a and b, and state n, m and p.

$$\frac{1+\sqrt{9a}}{b-\sqrt{4a}} = \frac{1+3\sqrt{a}}{b-2\sqrt{a}}$$

$$\frac{1+3\sqrt{a}}{b-2\sqrt{a}} \times \frac{b+2\sqrt{a}}{b+2\sqrt{a}}$$

$$= \frac{(1+3\sqrt{a})(b+2\sqrt{a})}{(b-2\sqrt{a})(b+2\sqrt{a})}$$

$$= \frac{b+2\sqrt{a}+3b\sqrt{a}+6a}{b^2+2b\sqrt{a}-2b\sqrt{a}-4a}$$

$$= \frac{b+(2+3b)\sqrt{a}+6a}{b^2-4a}$$

$$\frac{b+6a+(2+3b)\sqrt{a}}{b^2-4a}$$

$m = b+6a$

$n = 2+3b$

$p = b^2-4a$

$m =$ .....

$n =$ .....

$p =$ .....

(Total for Question 20 is 5 marks)

© Third Space Learning 2026. You may photocopy this page.

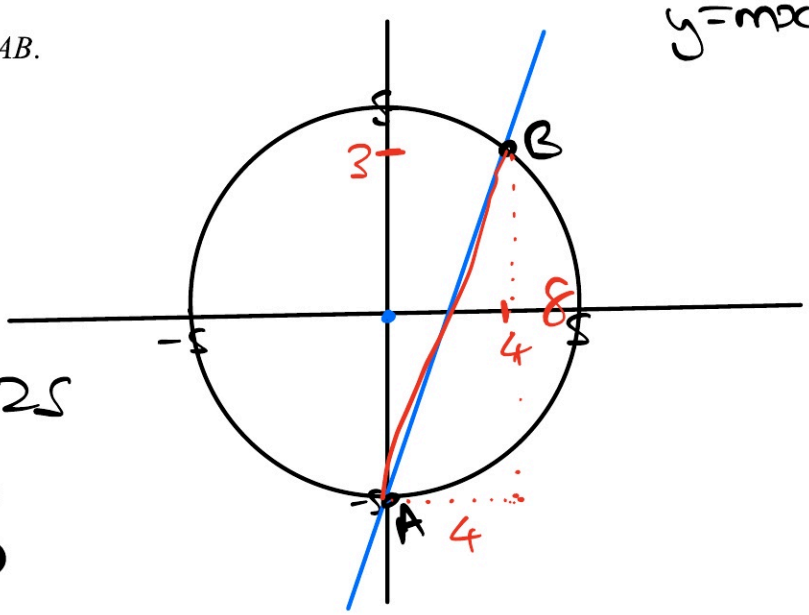
21 The circle with equation $x^2 + y^2 = 25$ and the line with equation $y = 2x - 5$ intersect at the points A and B.

Work out the exact length of the line AB.

$y = mx + c$

$x^2 + y^2 = r^2$ $\quad r = 5$

$x^2 + y^2 = 25$



$x^2 + (2x - 5)^2 = 25$

$x^2 + 4x^2 - 20x + 25 = 25$

$5x^2 - 20x = 0$

$5x(x - 4) = 0$

$5x = 0$ or $x - 4 = 0$

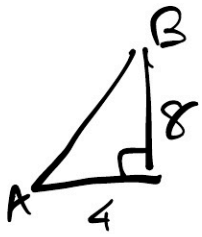
$x = 0$ $\quad x = 4$

$y = -5$

$y = 2x - 5$

$= 2(4) - 5$

$y = 3$



$AB = \sqrt{4^2 + 8^2}$

$= \sqrt{80}$

$= 4\sqrt{5}$

(Total for Question 21 is 6 marks)

© Third Space Learning 2026. You may photocopy this page.

Looking to improve your school's maths results without stretching your budget?

Tutoring from our spoken AI maths tutor Skye gives schools an even more affordable option for every pupil.

- 90% cheaper than other tutoring providers
- Curriculum-aligned lessons designed by qualified teachers
- Discounts available for long-term bookings and MATs

thirdspacelearning.com

0203 771 0095

hello@thirdspacelearning.com

Where to go next?

For more GCSE maths revision resources and worksheets, visit the Third Space Learning GCSE maths revision pages. Or scan the QR code to discover our library of FREE GCSE maths revision resources:

THIRD SPACE LEARNING