Paper 2 and Paper 3 Preparation Paper

# Edexcel Higher

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You will need a calculator

**Guidance**

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

## Paper 2 and 3 Checklist

| Question | Topic | Video number |
|---|---|---|
| **Starred Topics** | | |
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| 20 | Sequences | 288,289 |
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| Question | Topic | Video number |
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| 36 | Area of a Circle | 40 |
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| Question | Topic | Video number |
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| 64 | Combined Mean | 53a |
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| Question | Topic | Video number |
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| Question | Topic | Video number |
|---|---|---|
| 118 | Sketching Quadratics | 265 |
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| Seen Topics (remember they may still appear, so they may be worthwhile recapping) | | |
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1. Use your calculator to work out

$$\sqrt{39.3^2 - 1.24^2}$$

Write your answer to 3 significant figures.

.....

**(2)**

2. Use approximations to estimate the value of

$$\frac{596.4 \times 2.06}{0.521}$$

.....

**(3)**

---

3. A supermarket sells Baked Beans in two different size cans.


215g

40p


395g

74p

Which size can is the best value for money?
You must show all your working.

**(4)**

4. James has received two job offers.
A job in Milan which pays €55,000 a year.
A job in Boston which pays $64,000 a year.

The exchange rates were £1 = $1.42 and £1 = €1.25.

Which job offer has the highest salary?
Show working to explain your answer.

**(3)**

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5. Simplify

$$\frac{a^{\frac{1}{5}} \times a^{\frac{2}{3}}}{a^{\frac{3}{5}}}$$

.....

**(2)**

6. (a) Write 32 in the form $4^n$

.....

**(2)**

(b) Write $\frac{1}{8}$ in the form $2^n$

.....

**(2)**

---

7. Harriet travelled from Bath to Cardiff.
Her average speed was 58 miles per hour.

There is traffic on the return journey.
Her average speed is reduced by 23%

Work out the average speed on the return journey.

.....mph

**(3)**

8. Terry goes to the Post Office to exchange money.


Terry changes $651 and €161.20 into pounds sterling.
The Post Office deducts their commission and gives Terry £528.

What is the percentage commission?

.....%
**(4)**

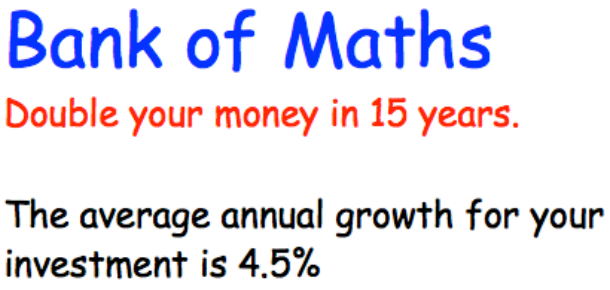
---

9. Nina invested £1500 for 4 years at 2.5% per annum simple interest.

Work out the total amount of money in the account at the end of 4 years.

£.....
**(3)**

10. Martyn has some money to invest and sees this advert.




Will Martyn double his money in 15 years by investing his money with "Bank of Maths?"
You **must** show your workings.

**(4)**

---

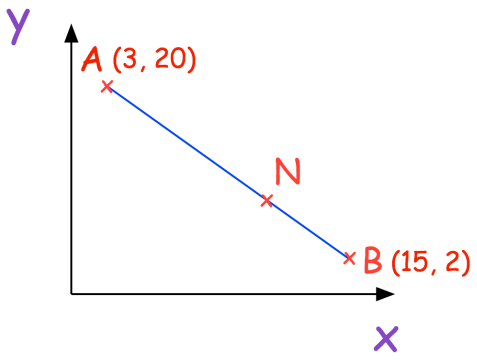
11. In a sale the price of a sofa is reduced by 70%.
The sale price is £255

Work out the price before the sale.

£.....

**(3)**

12. A is the point with coordinates (3, 20)
B is the point with coordinates (15, 2)
N is a point of the line AB such that AN : NB = 2 : 1




Find the coordinates of the point N.

.....
**(3)**

---

13. Declan ran a distance of 200m in a time of 26.2 seconds.

The distance of 200m was measured to the nearest 10 metres.
The time of 26.2 was measured to the nearest tenth of a second.

Work out the upper bound for Declan's average speed.

.....m/s
**(2)**

14. Jacob picks a 5-digit **even** number.

The first digit is a prime number.
The third digit is odd.
The fourth digit is 8

How many different 5-digit number could he pick?

……..

**(3)**

---

15. Nigel measures the time, t seconds, to complete a race as 15.4 seconds correct to the nearest tenth of a second.

Write down the error interval for t.

.....

**(2)**

---

16. Expand and simplify $(x – 6)(x + 1)(x – 2)$

.....

**(4)**

17. Factorise fully

$w^2y + wy^2$

.....

**(2)**

---

18. (a) Factorise $y^2 - 13y + 36$

.....

**(2)**

(b) Factorise $2w^2 - 9w + 4$

.....

**(2)**

---

19. Solve

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

.....

**(5)**

20. The first five terms in a sequence are 10, 17, 24, 31, 38 …

Write down the nth term of the sequence.

.....

**(2)**

---

21. Here are the first 5 terms of a quadratic sequence

9 17 29 45 65

Find an expression, in terms of n, for the nth term of this quadratic sequence.

.....

**(3)**

---

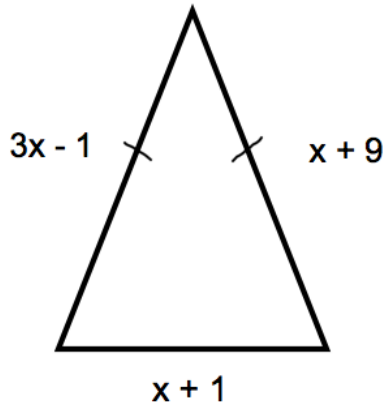
22. $v = u + at$

Work out a when $v = 62$, $u = 250$ and $t = 8$

.....

**(3)**

23. Shown below is an isosceles triangle. Each side is measured in centimetres.




Find the perimeter of the triangle

.....

**(4)**

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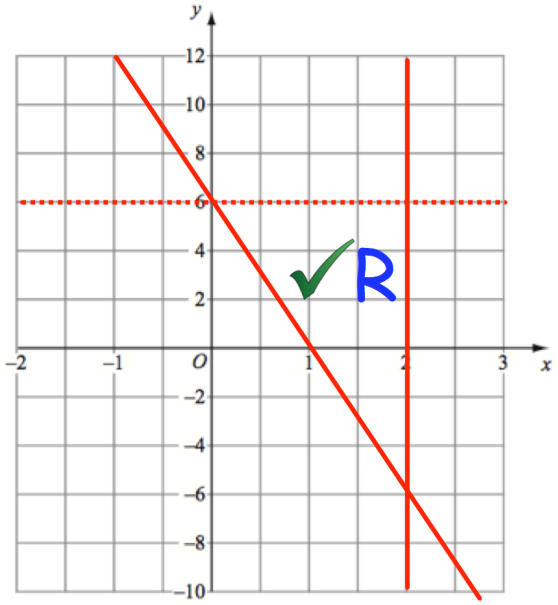
24. Make v the subject of the formula.

$$s = \frac{1}{2}(u + v)t$$

v = .....

**(3)**

25.




The region labelled R satisfies three inequalities.

State the three inequalities

.....

.....

.....

**(3)**

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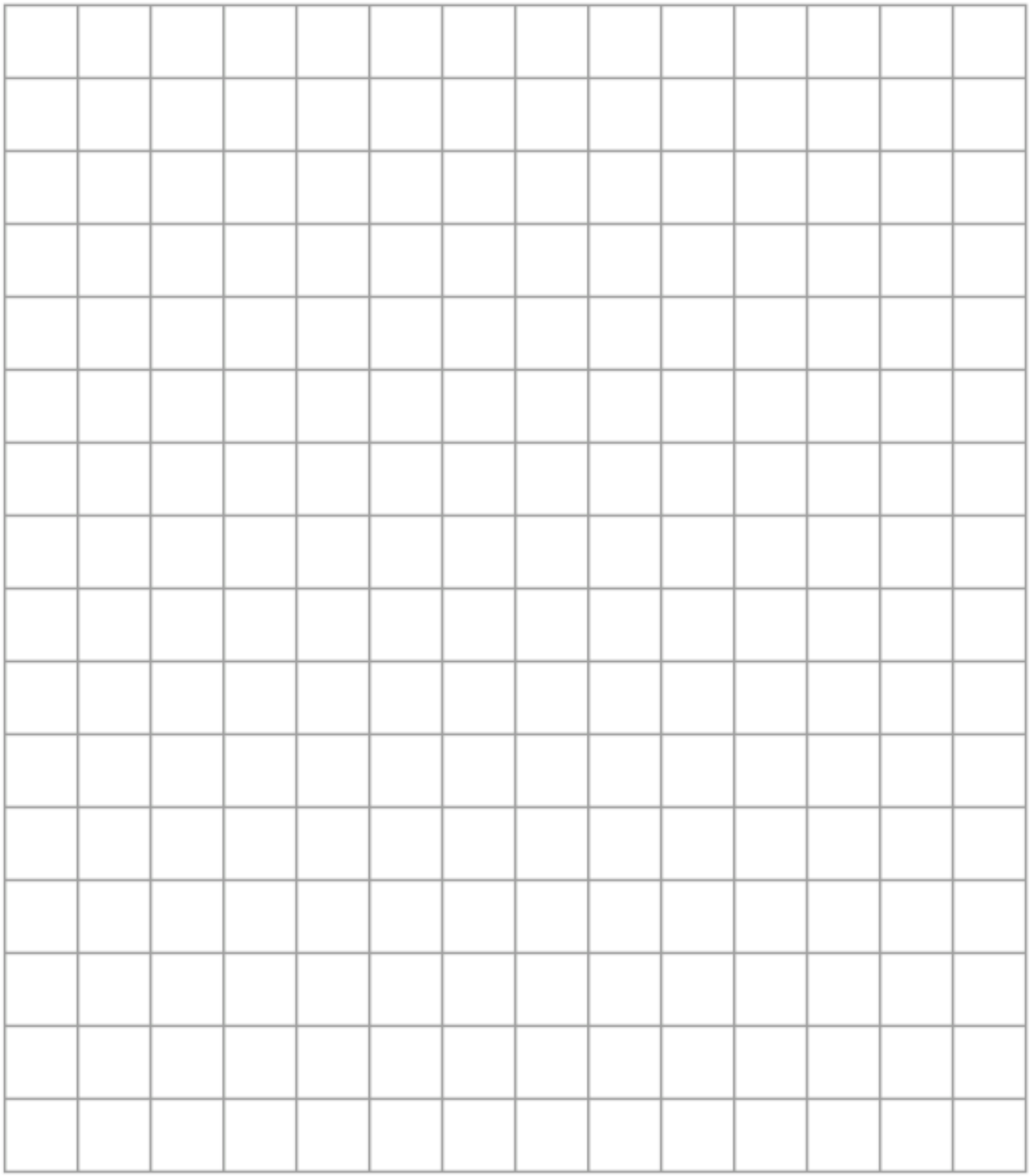
26. Solve the inequality $x^2 - 9x + 14 \leq 0$

.....

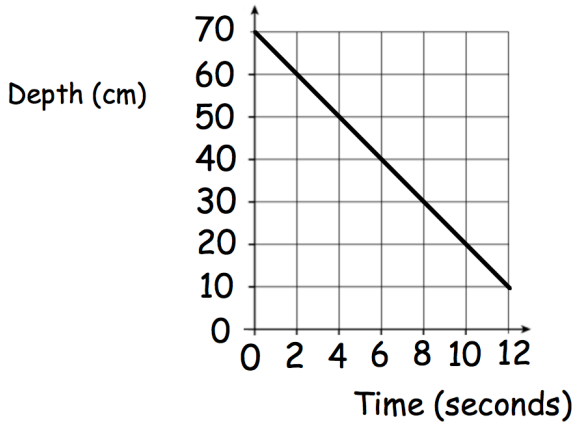
**(3)**

27.
On the grid, draw $x + 2y = 6$ for values of x from –2 to 2.



**(4)**

28. The graph below shows the depth of water in a container.




(a) Write down the gradient of the line

.....

**(1)**

(b) What does the gradient of the line represent?

.....

**(1)**

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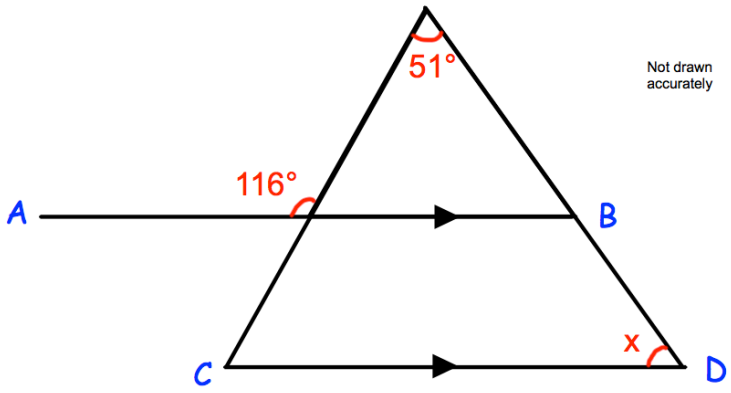
29. In the diagram, AB is parallel to CD.



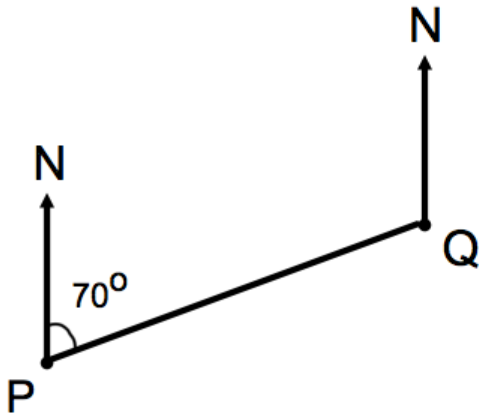

Work out the size of angle x.

You **must** show your workings.

.....°

**(4)**

30. The diagram shows the position of two airplanes, P and Q.




Not drawn accurately

The bearing of Q from P is 070°

Calculate the bearing of P from Q.

.....°

**(2)**

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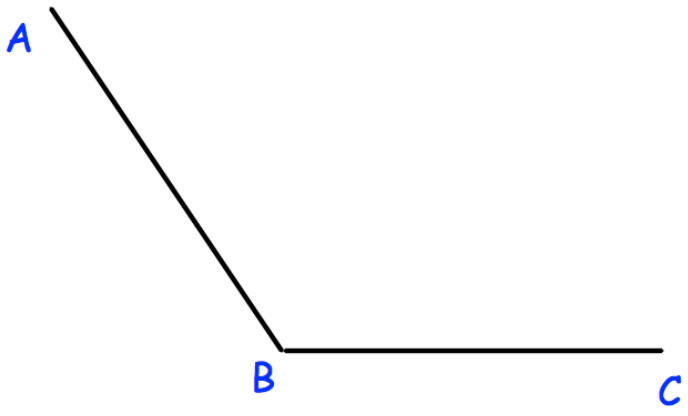
31. Using ruler and compasses, construct the bisector of angle ABC.




**(2)**

32. The diagram shows two lighthouses.
A boat is within than 8 miles of lighthouse A.
The same boat is within 6 miles of lighthouse B.
Shade the possible area in which the boat could be.


**(2)**

---

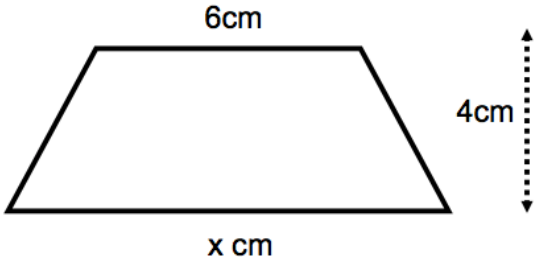
33. The front elevation of a solid shape is a circle.
The side elevation of the solid shape is a rectangle.
The plan view of the solid shape is a rectangle.

Write down the name of the shape.

.....

**(1)**

34.




The area of the trapezium is 34cm².

Work out the value of x.

.....cm

**(2)**

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35. James has a bicycle.
Each wheel has diameter 45cm.

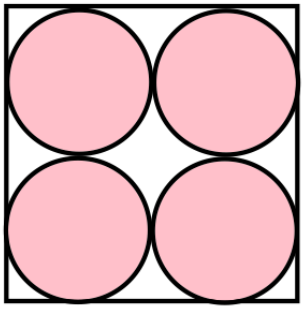
James cycles his bicycle in a straight line in the playground.
The front wheel makes 15 complete revolutions.

How far does the bicycle travel?
Give your answer in metres.

.....m

**(4)**

36. A logo is designed that has four pink circles within a white square.




The square has side length 16cm.

Find the area of the logo that is white.

.....cm²

**(5)**

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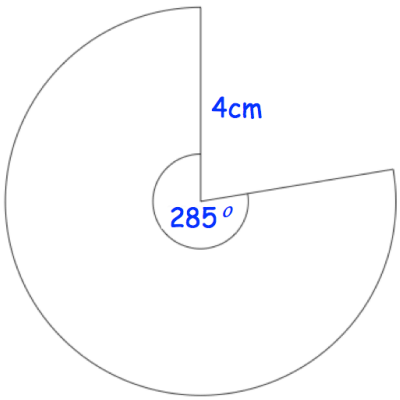
37.

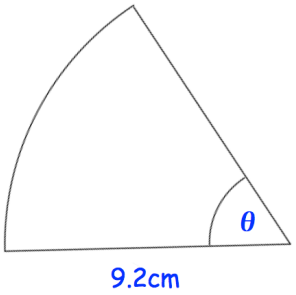



Calculate the perimeter of the sector.

.....cm

**(3)**

38. Shown is a sector of a circle with radius 9.2cm.




The area of the sector is 38.4cm²

Find the size of angle θ
Give your answer to 2 significant figures.

.....°
**(3)**

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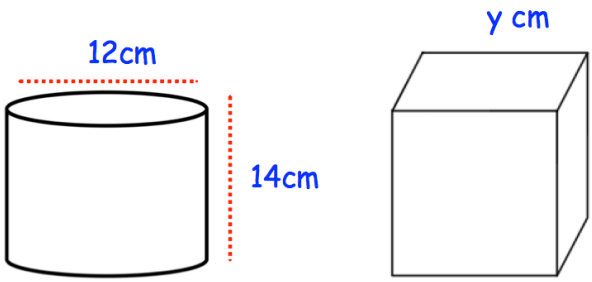
39.

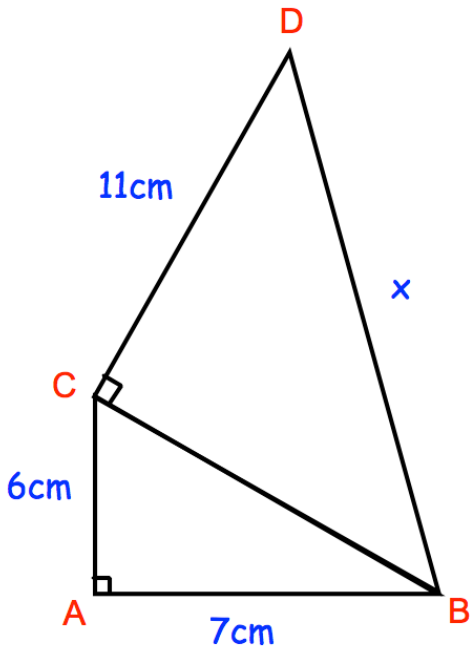



A cylinder has diameter 12cm and height 14cm.
A cube has side length y cm.
The cylinder and cube has the same volume.

Find y.

..... cm
**(4)**

40. Below are two triangles, ABC and BCD.

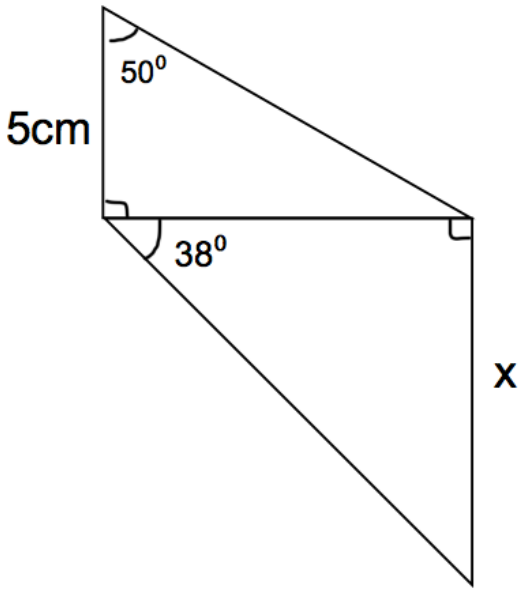



Find x

.....cm

**(4)**

41. The diagram shows two right-angled triangles.

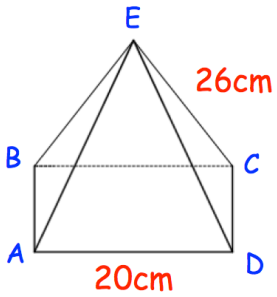



Calculate the value of x.

.....cm

**(5)**

42. Shown below is a square based pyramid.
The apex E is directly over the centre of the base.




AD = 20cm
CE = 26cm

(a) Work out the length of AC

.....cm
**(2)**

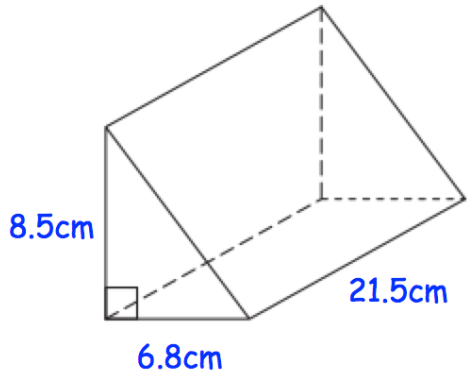
(b) Calculate angle CAE

..... °
**(2)**

(c) Work out the height of the pyramid

.....cm
**(2)**

43. Shown below is a triangular prism.




Find the volume of the triangular prism.

.....cm³

**(3)**

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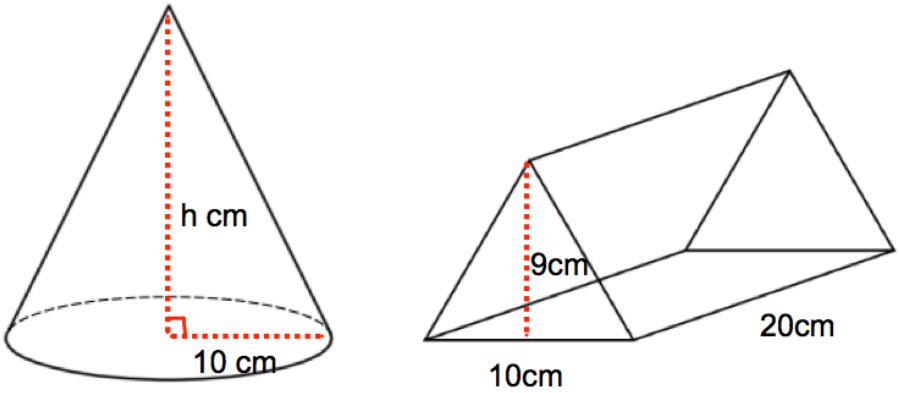
44. Shown is a cone and a triangular prism.




Both solids have the same volume.

Calculate the height of the cone.

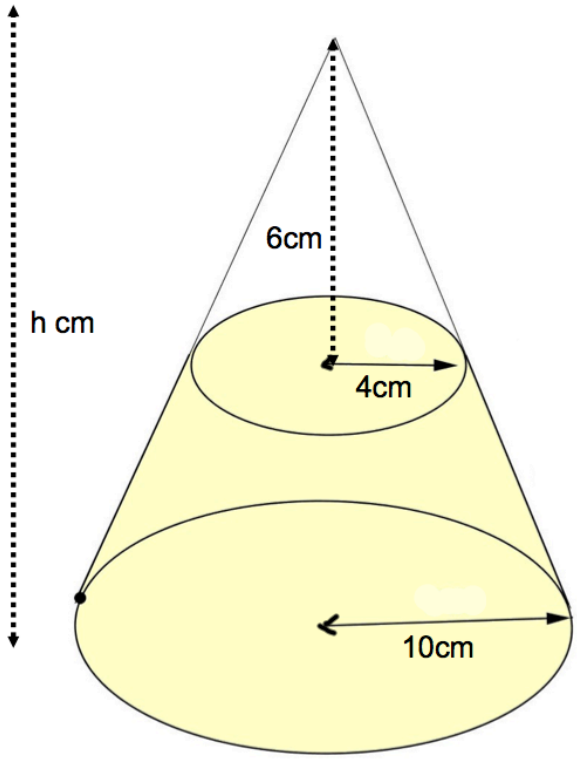
.....cm

**(3)**

45. A cone below has base radius 10cm and height h cm.

A smaller cone radius 4cm and height 6cm is cut from the top.

The frustum is shown below.




Calculate the volume of the frustum.

.....cm³

**(5)**

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46. A cube has a volume of 343cm³

Work out the surface area of the cube.

.....cm²

**(2)**

47. A sphere has a radius of 5cm.

Calculate the surface area of the sphere.

.....

**(3)**

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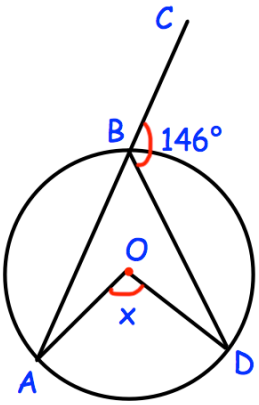
48.



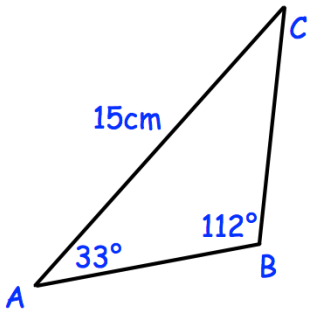

Shown is a circle with centre O.
ABC is a straight line.
Angle CBD is 146°

Find the size of angle AOD.

.....°

**(3)**

49.




In triangle ABC the length of AC is 15cm.
Angle ABC = 112°
Angle BAC = 33°

Work out the length of BC.

.....cm
**(3)**

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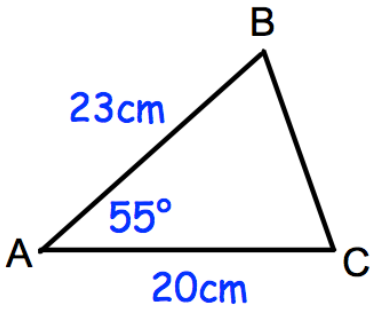
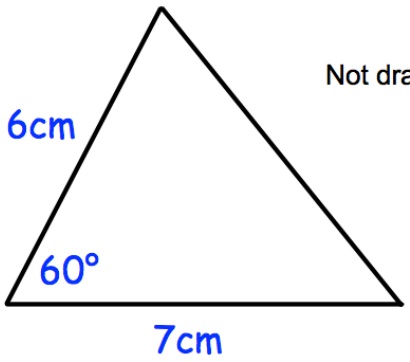
50.




Calculate the length of BC.

.....cm
**(3)**

51.




Not drawn is scale.

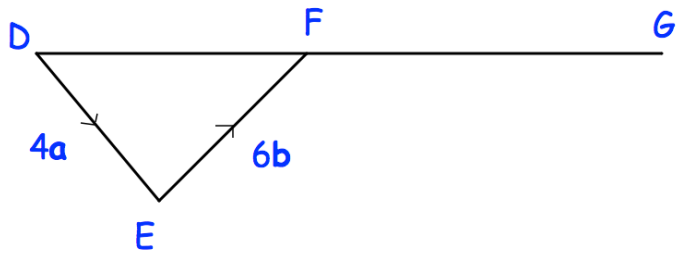
Calculate the area of the triangle.

.....cm²

**(2)**

52. DFG is a straight line.

$\overrightarrow{DE} = 4\mathbf{a}$ and $\overrightarrow{EF} = 6\mathbf{b}$




(a) Write down the vector $\overrightarrow{DF}$ in terms of **a** and **b**

.....

**(1)**

(b) DF : FG = 2:3

Work out the vector $\overrightarrow{DG}$ in terms of **a** and **b**
Give your answer in its simplest form.

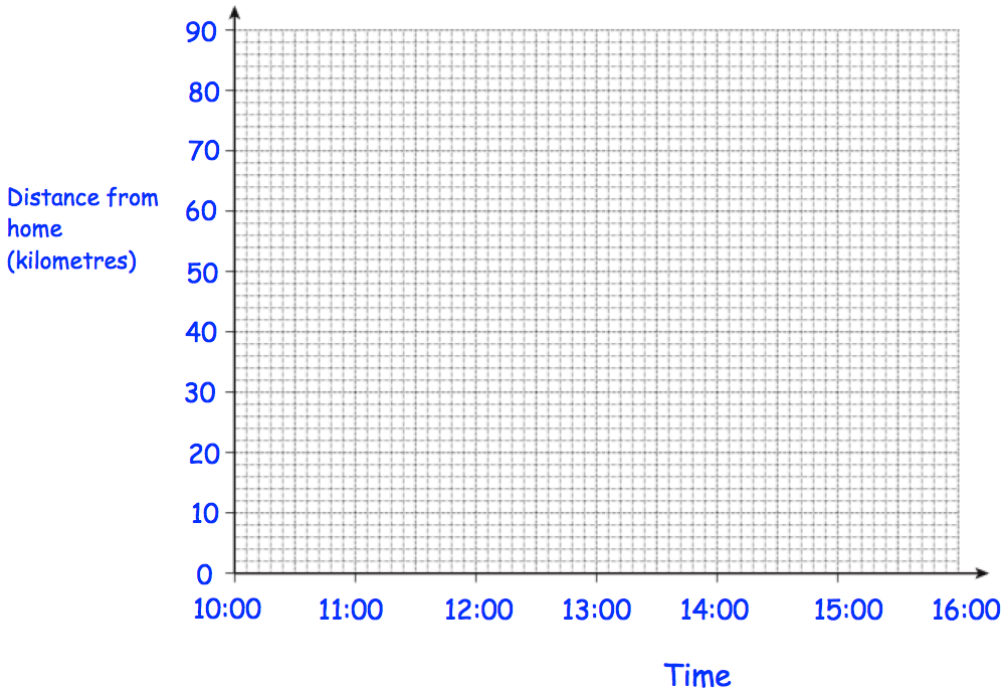
.....

**(2)**

53. Bethany drove to a family meal and then back home.
The meal was at a restaurant that is 70 kilometres from her home.

Bethany left home at 10:00 and arrived at the restaurant at 11:30.
She stayed at the family meal for 2 hours.
Bethany then drove home at a speed of 35 kilometres per hour.

Show this information on the distance-time graph.




**(3)**

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54. $\mathbf{a} = \begin{pmatrix} 9 \\ 6 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$

Work out $3\mathbf{a} - \mathbf{b}$

$\begin{pmatrix} \cdots \\ \cdots \end{pmatrix}$

**(2)**

55. The speed limit on a road is 50 mph.

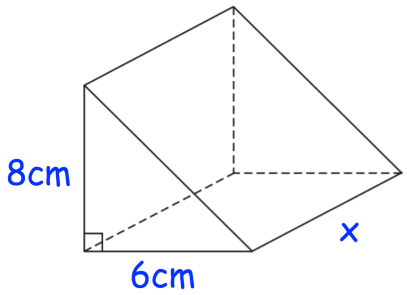
A car drives 19 miles in 22 minutes.

Is the car breaking the speed limit?
You must show your workings.

**(3)**

---

56. The diagram shows a solid triangular prism.




The prism is made from wood and has a mass of 643.8g
The density of wood is 1.85g/cm³

Calculate the length of the prism.

……..cm
**(4)**

57. An object is placed on a table.
It exerts a force of 22 newtons on the table.

The pressure on the table is 500 newtons/m²

Calculate the area of the crate that is in contact with the table.
Include suitable units.

.....

**(3)**

---

58. 100 students study one language at a college.

Some students study French.
Some students study Spanish.
The rest of the students study German.

54 of the students are in Year 12.
20 of the 29 students who study Spanish are in Year 13.
31 students study German.
15 Year 13 students study French.

Work out the number of Year 12 students who study German.

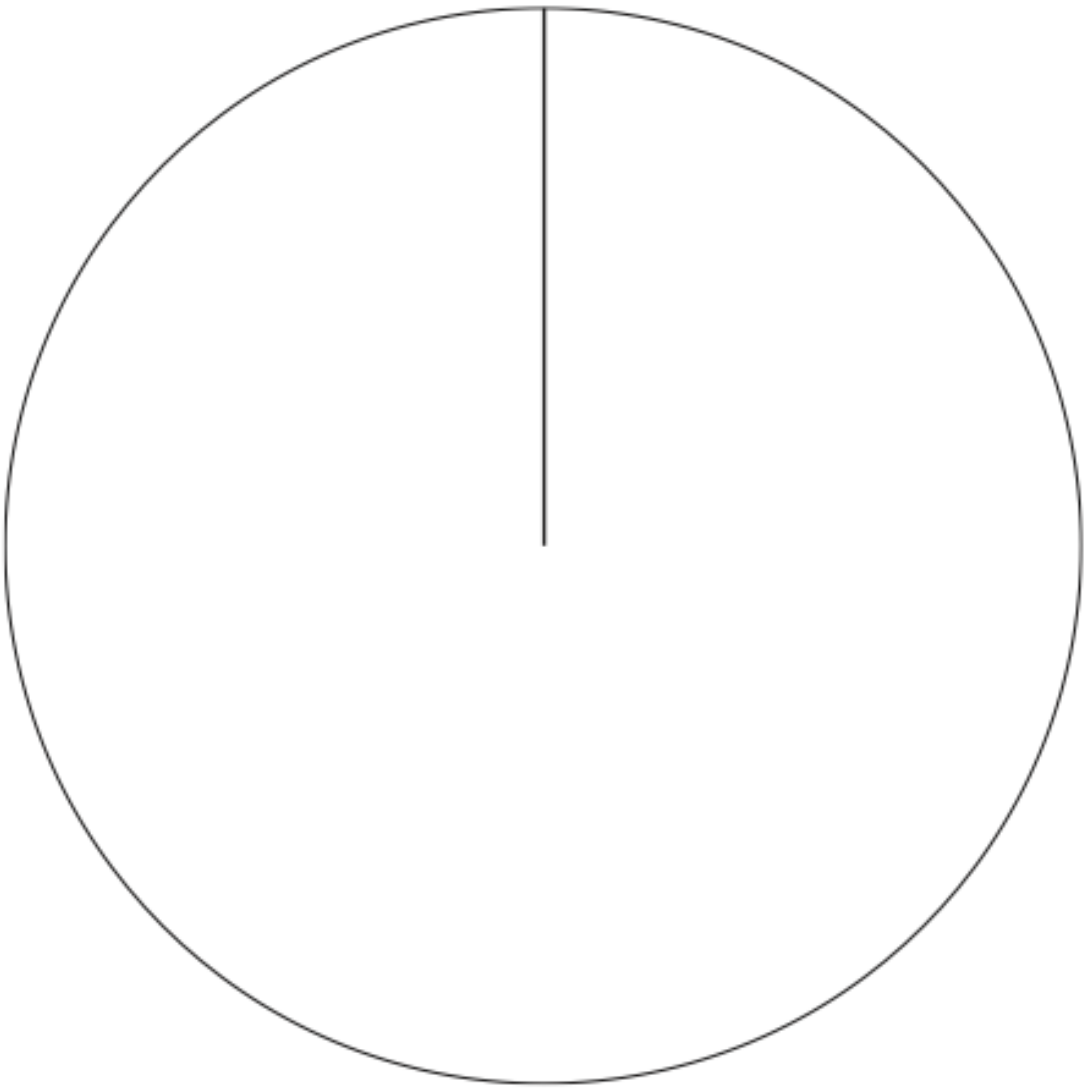
.....

**(4)**

59. The table gives information about the number of students in years 7 to 10.

| Year | Frequency |
|---|---|
| 7 | 200 |
| 8 | 140 |
| 9 | 220 |
| 10 | 160 |

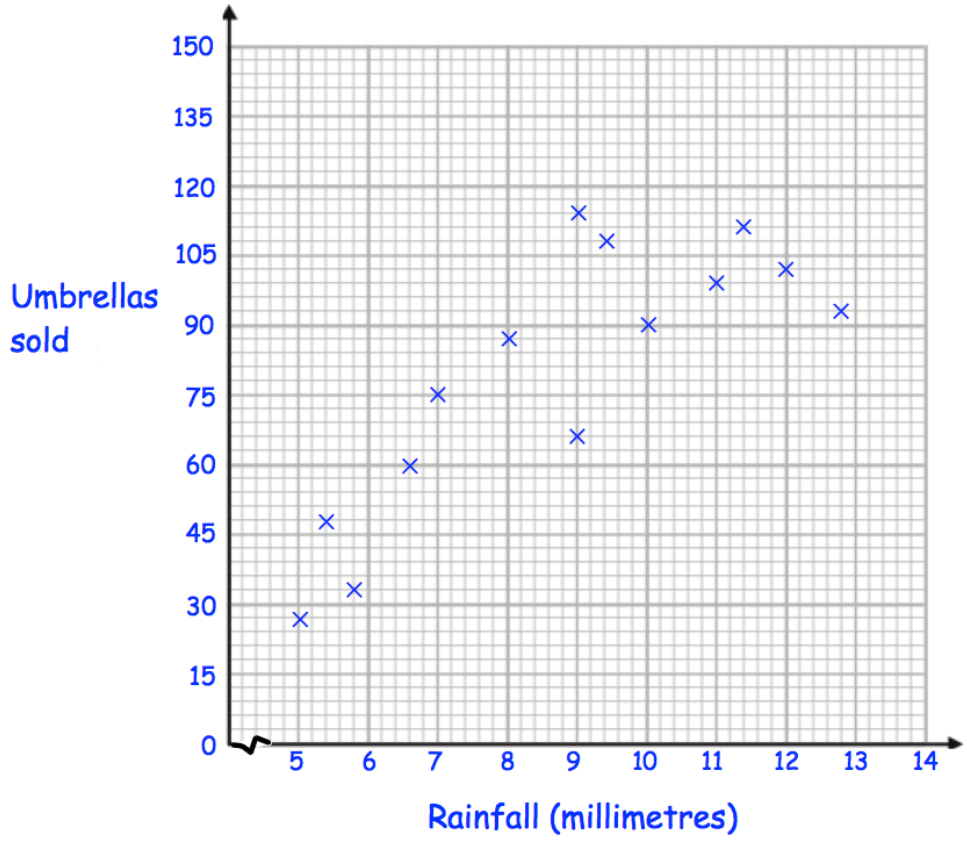
Draw an accurate pie chart to show this information.



**(4)**

60. A shop sells umbrellas.

The scatter graph shows information about the number of umbrellas sold each week and the rainfall that week, in millimetres.




(a) Describe the relationship between the rainfall and umbrellas sold.

.....

.....

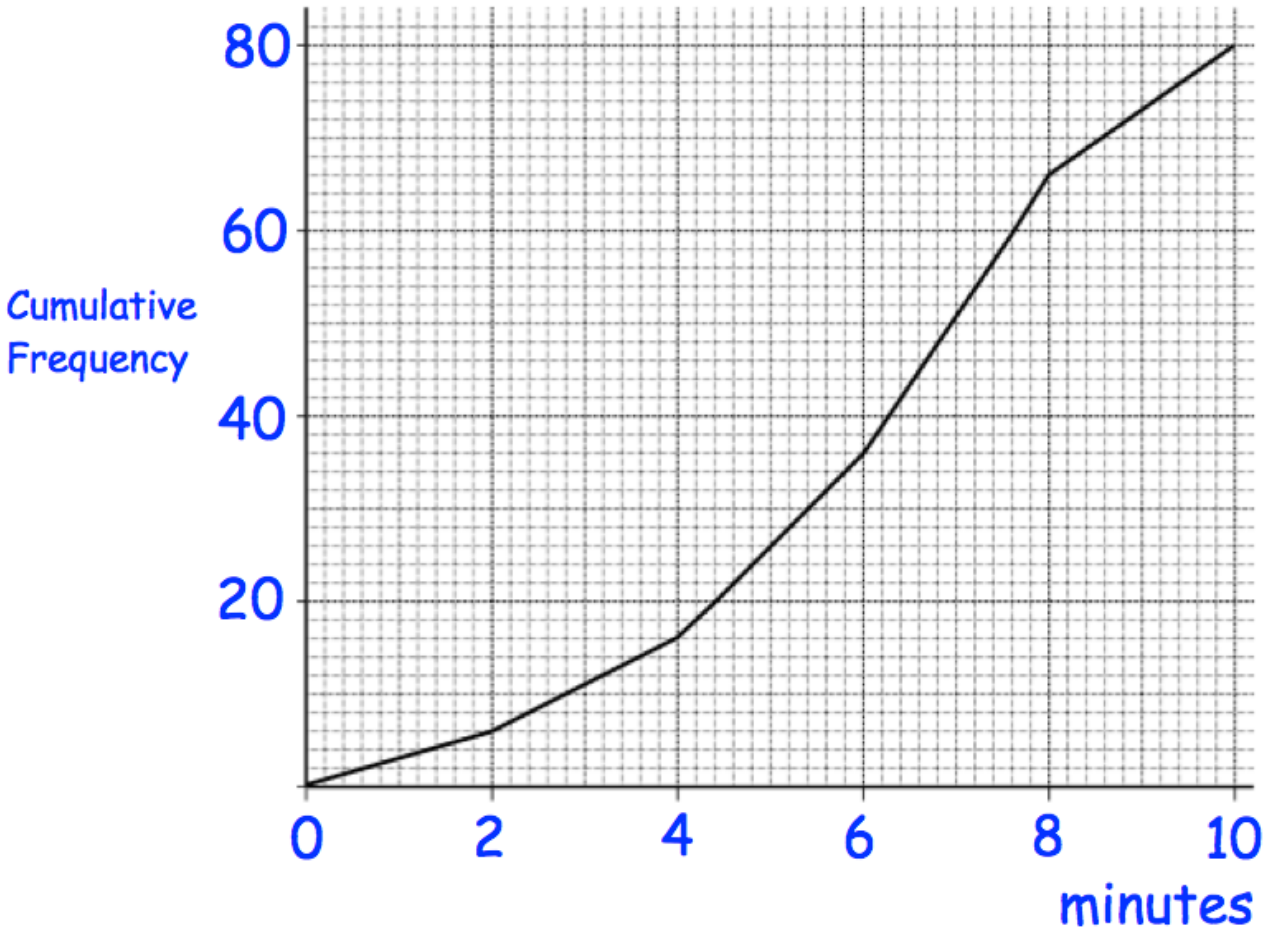
**(1)**

(b) What is the greatest amount of rainfall in one week?

.....

**(1)**

61. The length of time, in minutes, that 80 customers spend in a shop was recorded. A cumulative frequency diagram of this data is below.




(a) Find an estimate of the median.

.....minutes

**(1)**

(b) Estimate how many customers spent more than 5 minutes in the shop.

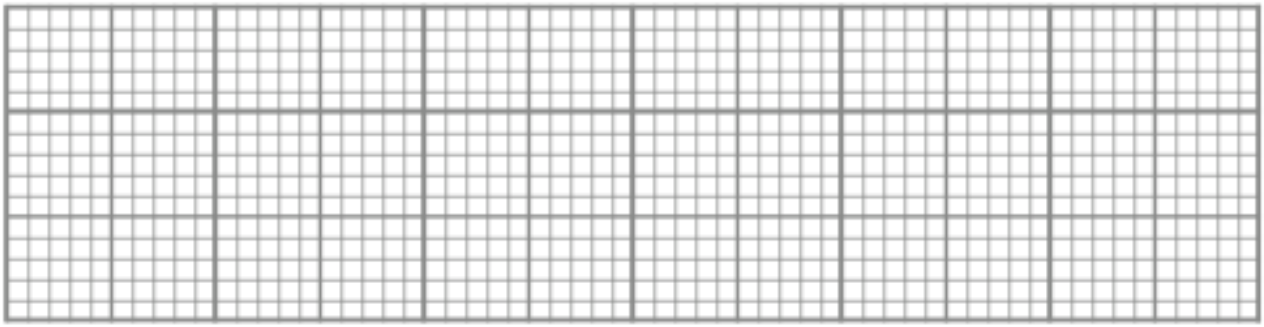
.....

**(1)**

62. The table gives information about the weights of 50 rugby players.

| | |
|---|---|
| Lowest | 68kg |
| Lower Quartile | 74kg |
| Median | 82kg |
| Upper Quartile | 88kg |
| Highest | 100kg |

Draw a box plot to show this information.



**(3)**

---

63. Timothy weighs the mass of some oranges, in grams.
The table shows some information about his results.

| Mass | Frequency |
|---|---|
| $20 < m \leq 25$ | 12 |
| $25 < m \leq 30$ | 24 |
| $30 < m \leq 35$ | 17 |
| $35 < m \leq 40$ | 15 |
| $40 < m \leq 45$ | 4 |

Work out an estimate for the mean mass of an orange.

.....grams

**(4)**

64. 5 Year 10 students and 45 Year 11 students sit a test.

The mean mark for the whole group is 70
The mean mark for the Year 11 students is 72

Work out the mean mark for the Year 10 students.

.....

**(2)**

---

65. A manager recorded how long each customer spent in his supermarket.
The table shows his results.

| Time, $t$ (minutes) | Frequency |
|---|---|
| $0 < t \leq 10$ | 24 |
| $10 < t \leq 20$ | 31 |
| $20 < t \leq 30$ | 50 |
| $30 < t \leq 40$ | 35 |
| $40 < t \leq 50$ | 60 |

Which class interval contains the median?

.....

**(1)**

66. The table shows the number of pages in 100 books.

| Number of pages, x | Frequency |
|---|---|
| $0 < x \leq 100$ | 7 |
| $100 < x \leq 200$ | 25 |
| $200 < x \leq 300$ | 40 |
| $300 < x \leq 400$ | 12 |
| $400 < x \leq 500$ | 16 |

Write down the modal class interval.

.....

**(1)**

---

67. 480 students attend a school.

A teacher asks 50 students which colour they would like the new school blazer to be.

The table shows the results.

| Colour | Number of students |
|---|---|
| Black | 20 |
| Navy | 15 |
| Green | 9 |
| Maroon | 6 |

Estimate how many of the 480 students would like a black blazer.

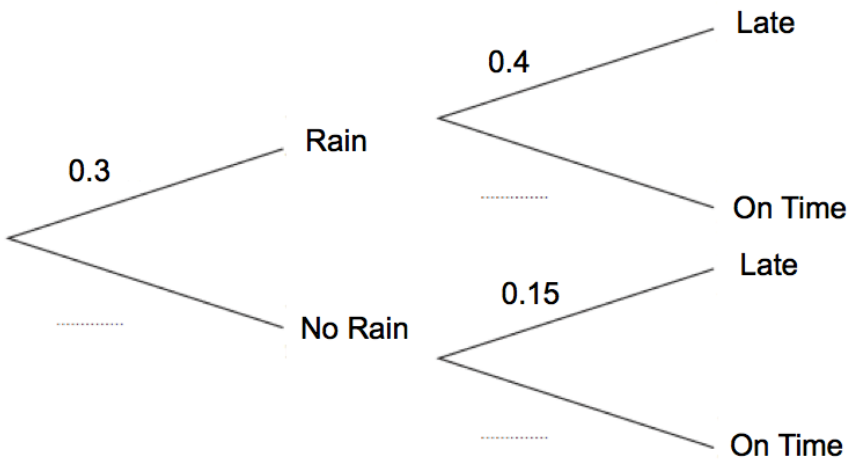
.....

**(2)**

68. In a small village, one bus arrives a day.

The probability of rain in the village is 0.3.
If it rains, the probability of a bus being late is 0.4.
If it does not rain, the probability of a bus being late is 0.15.

(a) Complete the tree diagram




**(2)**

(b) Work out the number of days the bus should be late over a period of 80 days.

.....

**(3)**

---

69. A group of scientists want to estimate the number of eels in a lake.
They catch and ring 40 eels.
They return the 40 eels to the lake.
They then catch 180 eels and 23 are ringed.

Estimate the number of eels in the lake.

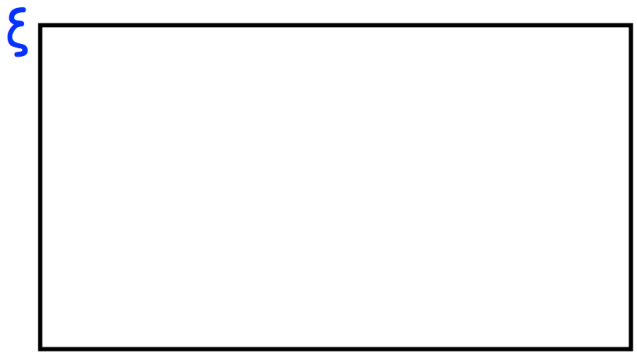
.....

**(2)**

70. A gym runs two fitness classes, spinning and circuits.

On Saturday 100 people visited the gym.
18 people attended the spinning class.
10 people attended both classes.
56 people did not attend either class.

(a) Represent this information on a Venn diagram




**(3)**

A person who attended the gym is selected at random.

Find the probability that this person

(b) attended only circuits

.....

**(2)**

(c) attended exactly one class

.....

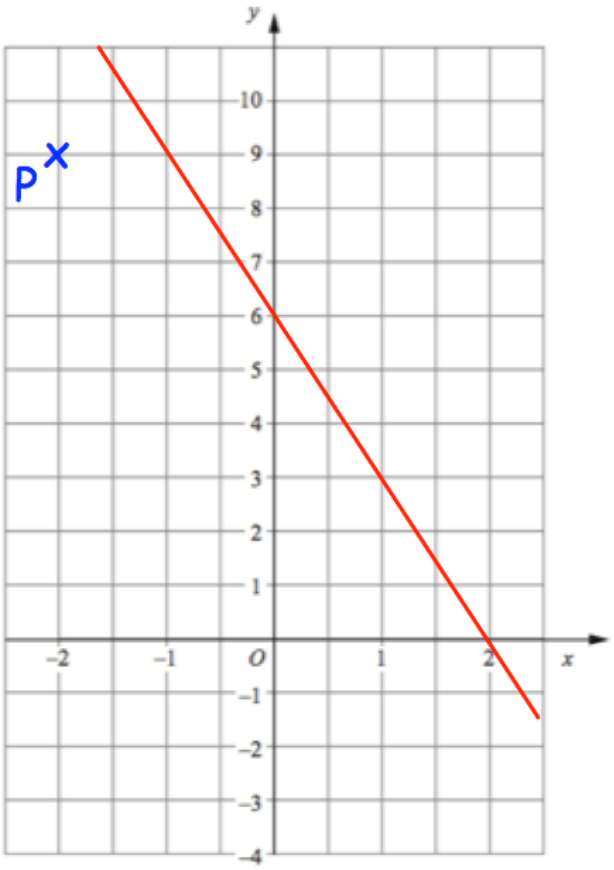
**(2)**

(d) attended spinning, given that they attended circuits

.....

**(2)**

71.




(a) Find the equation of L.

.....

**(3)**

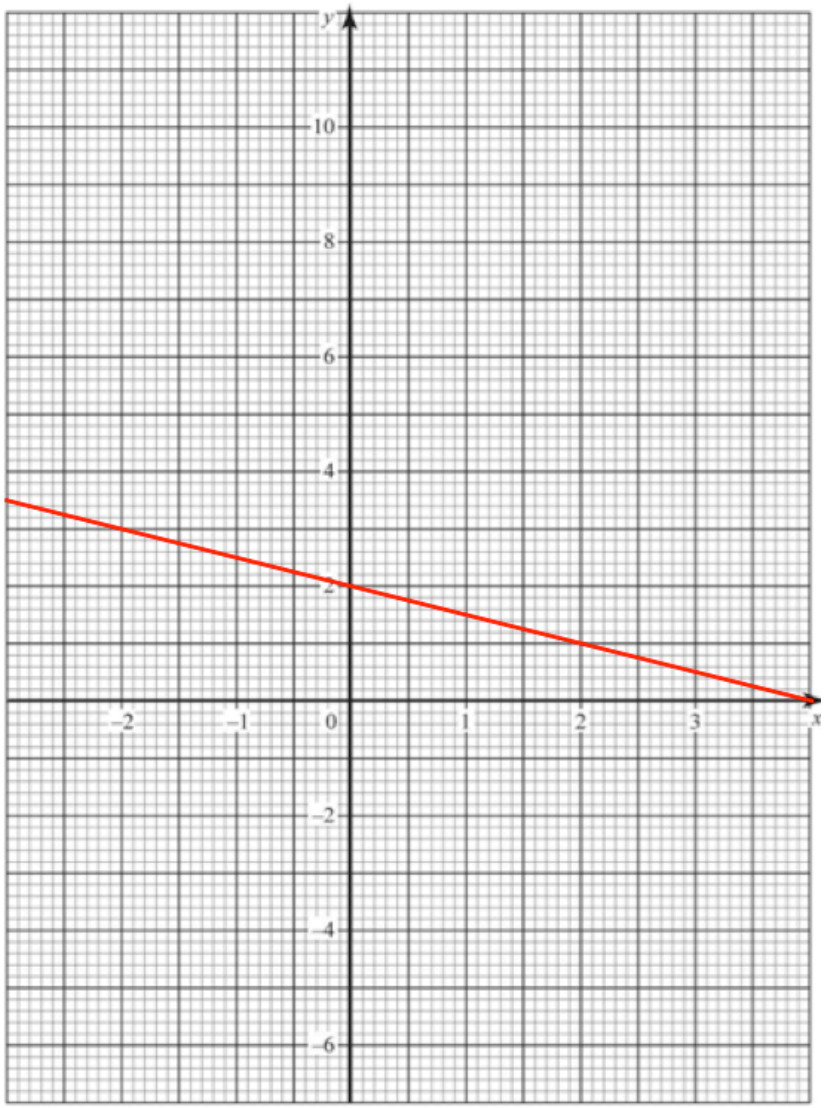
The point P has coordinates (–2, 9).

(b) Find an equation of the line that is parallel to L and passes through P.

.....

**(2)**

72.




The straight line L has equation $y = -\frac{1}{2}x + 2$

(a) Write down the equation of a line parallel to L

.....

**(1)**

(b) Find an equation of the line that goes through the point (1, 6) and is perpendicular to L

.....

**(3)**

73. Solve the simultaneous equations

$2x + 4y = 26$
$3x - y = 4$

Do not use trial and improvement

x = ..... y = .....

**(3)**

---

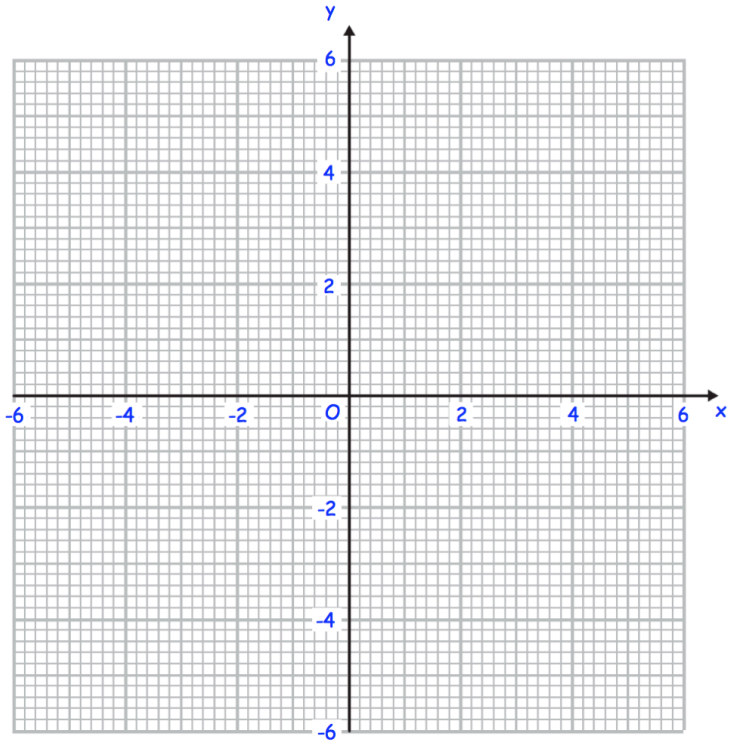
74. Solve the simultaneous equations

$2x + y = 5$
$2x^2 + y^2 = 11$

.....

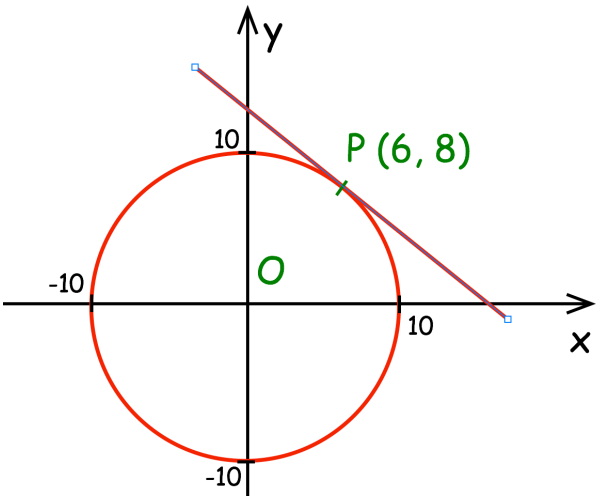
**(4)**

75. Draw the circle with equation $x^2 + y^2 = 16$




**(2)**

76. Here is a circle, centre O, and the tangent to the circle at the point (6, 8).



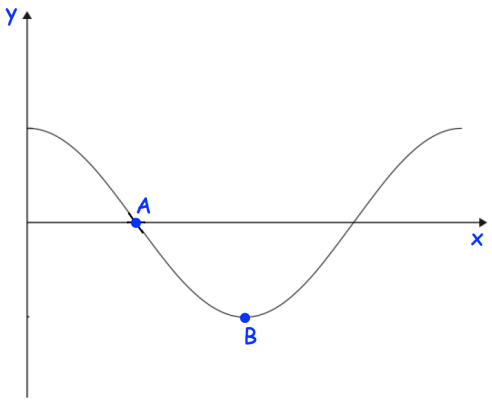

Find the equation of the tangent at the point P.

.....

**(4)**

---

77. Here is the graph of $y = \cos x$




(a) Write down the coordinates of the point A.

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

**(1)**

(b) Write down the coordinates of the point B.

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

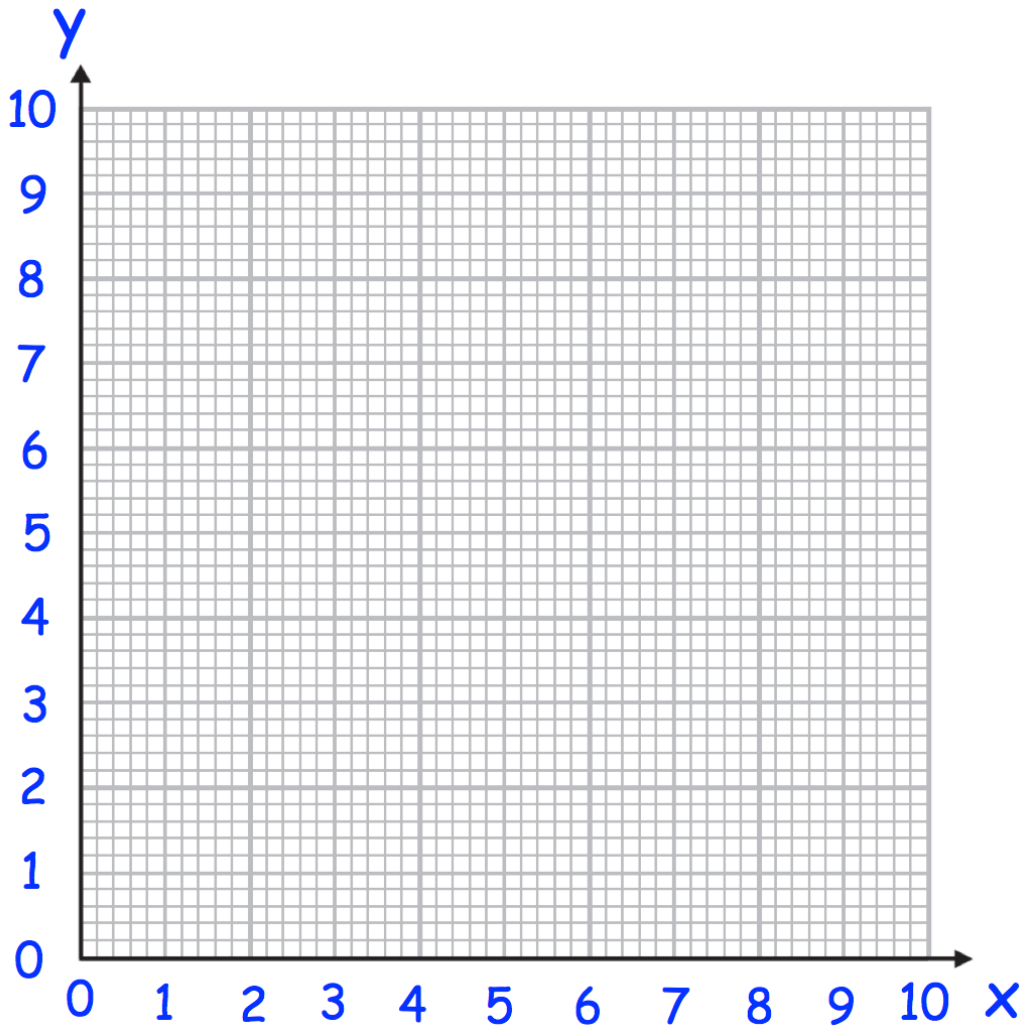
**(1)**

78. (a) Complete the table of value for $y = \frac{4}{x}$

| x | 0.5 | 1 | 2 | 4 | 8 | 10 |
|---|---|---|---|---|---|---|
| y | | | | | | |

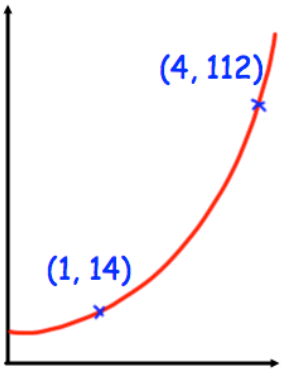
**(2)**

(b) On the grid, draw the graph of $y = \frac{4}{x}$ for $0.25 \leq x \leq 10$




**(2)**

79.




The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (1, 14) and (4, 112)

Calculate the value of a and b

a = .....

b = .....

**(3)**

---

80. S is a geometric sequence.

The first three terms of S are $(x + 18)$, $x$ and $(2x – 15)$, where x is positive.

Find the value of x.

.....

**(3)**

81. Solve the equation $x^2 - 2x - 9 = 0$

Give your answers to two decimal places.

x = ..... or x = .....

**(3)**

---

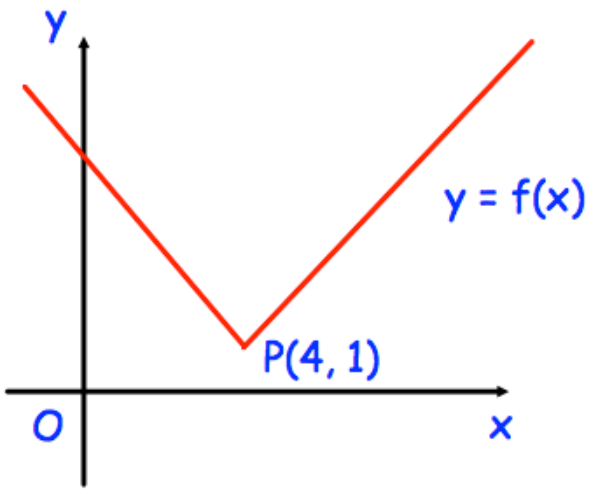
82. A curve has equation $y = x^2 - 6x - 17$

Work out the coordinates of the turning point using completing the square.

.....

**(3)**

83. Here is the graph of y = f(x)
The point P(4, 1) is a point on the graph.




What are the coordinates of the new position of P when the graph y = f(x) is transformed to the graph of

(a) y = –f(x)

(..... , .....)
**(1)**

(b) y = f(x) + 4

(..... , .....)
**(1)**

(c) y = f(–x)

(..... , .....)
**(1)**

(d) y = f(x + 5)

(..... , .....)
**(1)**

84. (a) Show that the equation $x^3 + 2x = 1$ has a solution between x = 0 and x = 1

**(2)**

(b) Show that the equation $x^3 + 2x = 1$ can be rearranged to give $x = \frac{1}{2} - \frac{x^3}{2}$

**(1)**

(c) Starting with $x_0 = 0$, use the iteration formula $x_{n+1} = \frac{1}{2} - \frac{x_n^3}{2}$ twice to find an estimate for the solution of $x^3 + 2x = 1$

**(3)**

85. Hannah is baking two cakes.

One cake needs 1⅓ cups of milk.
Hannah has 1¼ cups of milk.

How much more milk does Hannah need?

.....cups
**(3)**

---

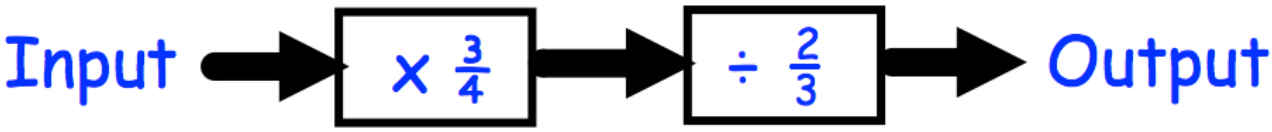
86. Work out

$$1\frac{1}{3} \times 2\frac{2}{5}$$

Give your answer as a mixed number.

.....
**(3)**

87.




(a) Find the output, if the input is 2.

.....

**(3)**

(b) Find the input, if the output is ½

.....

**(3)**

---

88. Write down the reciprocal of 0.35

.....

**(1)**

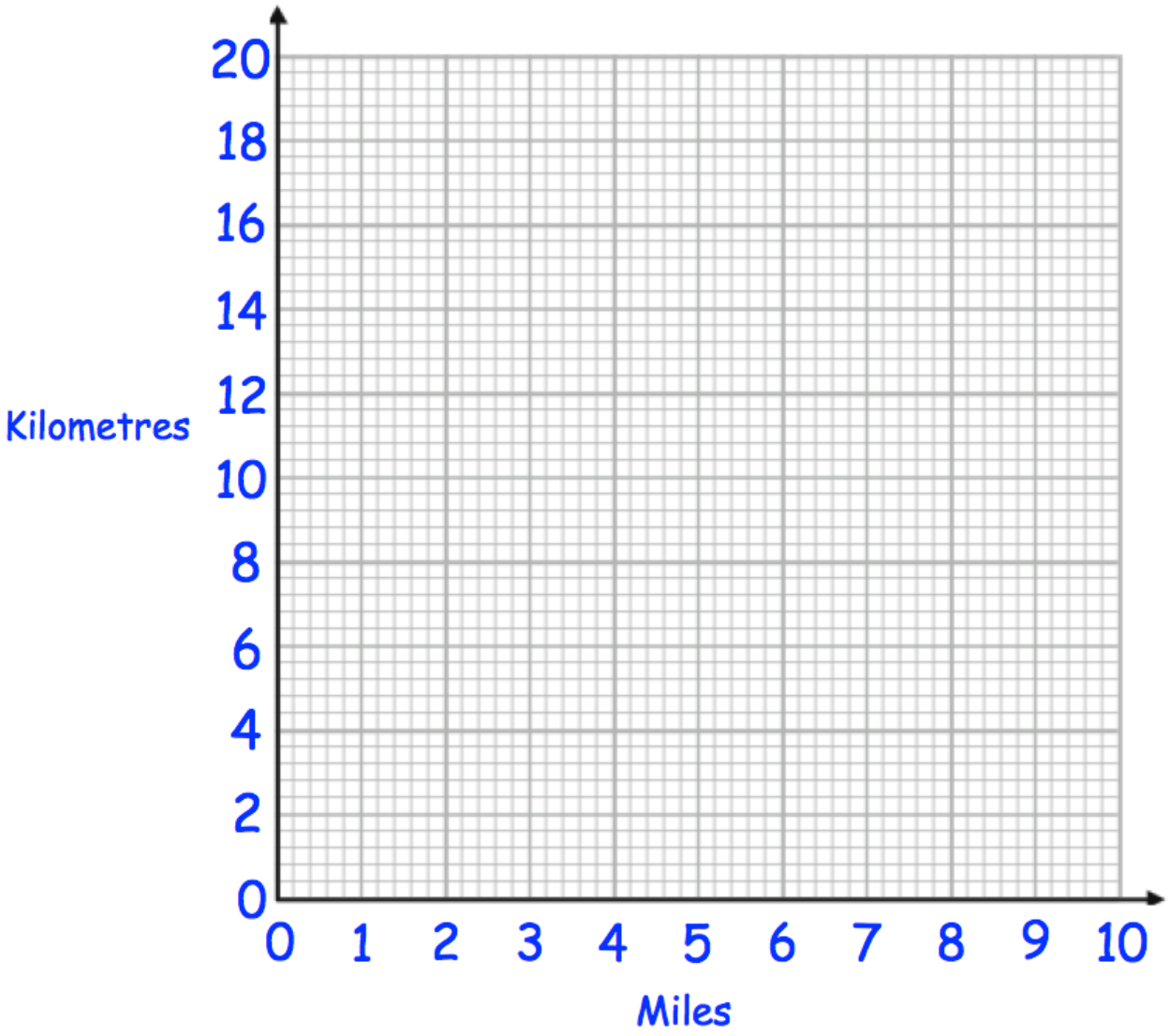
---

89. Work out $0.017 \times 0.45$

.....

**(2)**

90. (a) Use the fact 5 miles = 8 kilometres to draw a conversion graph on the grid.




**(2)**

Use your graph to convert

(b) 8 miles to kilometres

.....km

**(1)**

(c) 6 kilometres to miles

.....miles

**(1)**

91. Find the Lowest Common Multiple (LCM) of 60 and 72.

.....

**(2)**

---

92. (a) Express 108 as a product of its prime factors.
Give your answer in index form.

.....

**(3)**

(b) Find the Highest Common Factor (HCF) of 108 and 72.

.....

**(2)**

93. (a) Write 5930000000 in standard form.

.....

**(1)**

(b) Write $8.024 \times 10^{-4}$ as an ordinary number.

.....

**(1)**

(c) $c = 2 \times 10^6$ and $y = 6 \times 10^5$

$$w^2 = \frac{cy}{c - y}$$

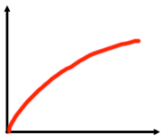
Work out the value of w.
Give your answer in standard form correct to 2 significant figures.

.....

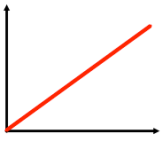
**(3)**

---

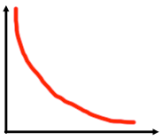
94. Match each graph to the correct relationship.



$y \propto \frac{1}{x}$



$y \propto \sqrt{x}$



$y \propto x$

**(3)**

95. It takes 6 hours for 20 workers to seed 40 acres.

How long would it take 10 workers to seed 90 acres?

.....

**(3)**

---

96. (a) Rationalise the denominator of

$$\frac{12}{\sqrt{3}}$$

.....

**(2)**

(b) Evaluate $\sqrt{2} \times \sqrt{32}$

.....

**(2)**

(c) Expand and simplify $(\sqrt{3} + \sqrt{5})^2$

.....

**(2)**

(d) Evaluate $(5 + \sqrt{2})(5 - \sqrt{2})$

.....

**(2)**

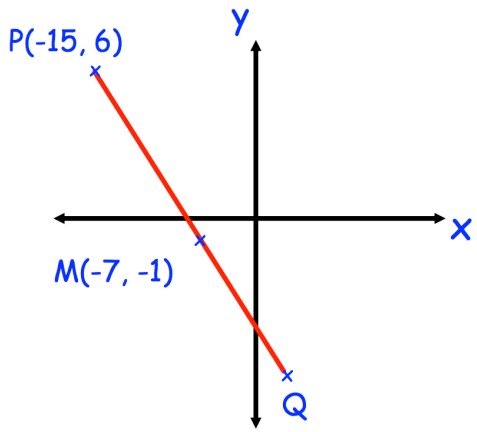
97. Simplify 9h + 5k + 4h – 8k

.....

**(2)**

---

98.



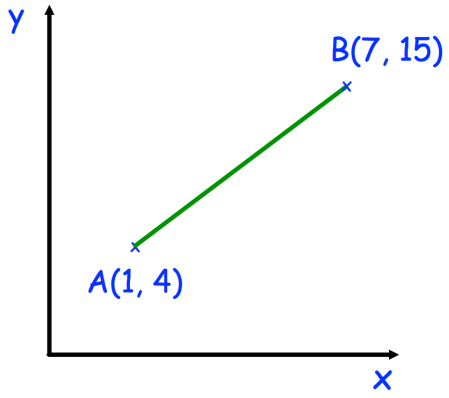

M is the midpoint of PQ

Write down the coordinates of the point Q.

.....

**(2)**

99. Shown below are the points A(1, 4) and B(7, 15)



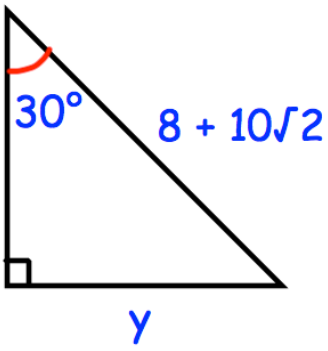

Calculate the length of the line joining A and B.

.....

**(2)**

---

100. Shown below is a right angled triangle.




Find the exact length of the side labelled y.

.....

**(4)**

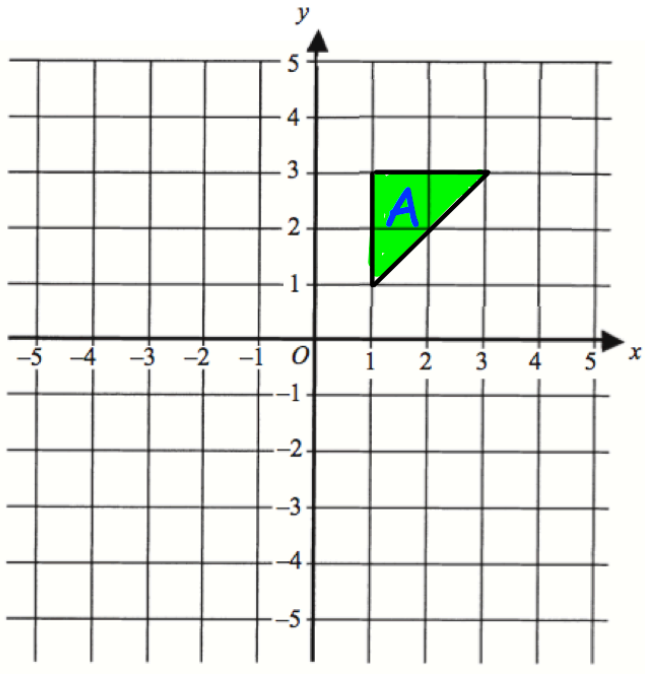
---

101. Convert 552 cm² into m²

..... m²

**(1)**

102.

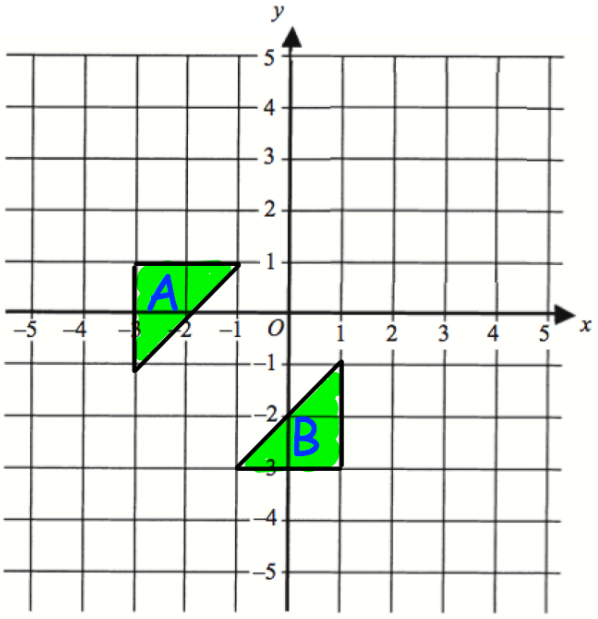



Translate triangle A by the vector $\begin{pmatrix} -3 \\ 1 \end{pmatrix}$

**(2)**

---

103.



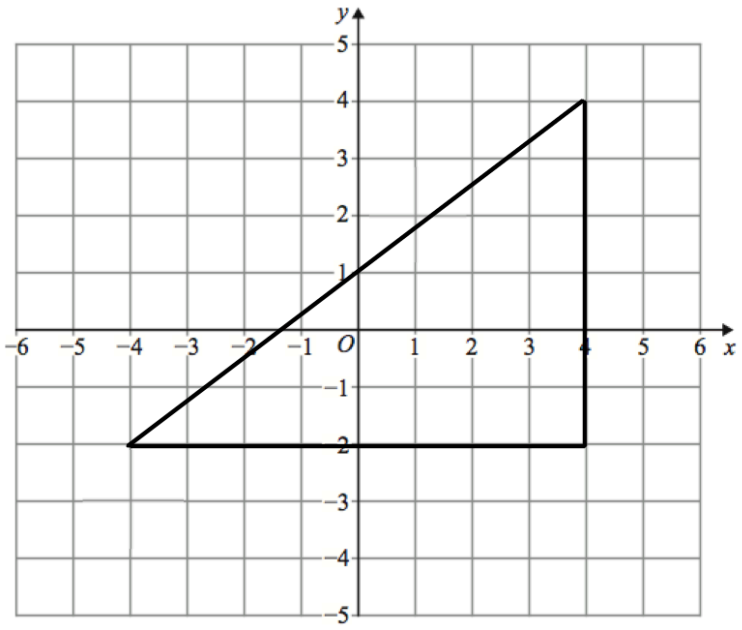

Describe fully the single transformation that maps triangle A onto triangle B.

.....

.....

**(2)**

104.




Enlarge the triangle by scale factor –½, using centre of enlargement (2, 0)

**(3)**

---

105. Mrs Hampton is potting plants.
She is using two mathematically similar pots, the smaller is 10cm tall and the larger 14cm tall.

She has two bags of soil, each containing 30 litres of soil.

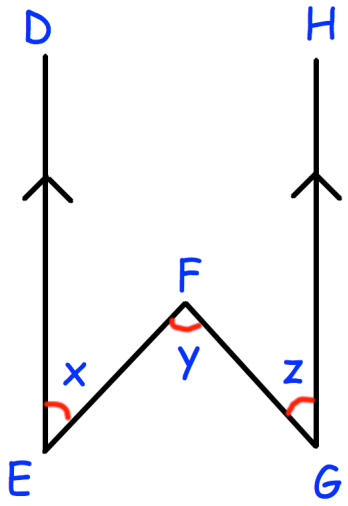
With the first bag, Mrs Hampton fills 20 small pots using all of the soil in the bag.


How many large pots can be filled completely using the second bag of soil?

.....

**(5)**

106. In the diagram below, the lines ED and GH are parallel.

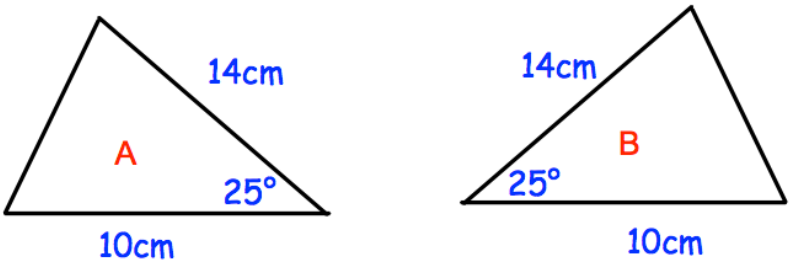



Prove that $x + z = y$

**(3)**

107. For each pair below, state the condition why they are congruent.

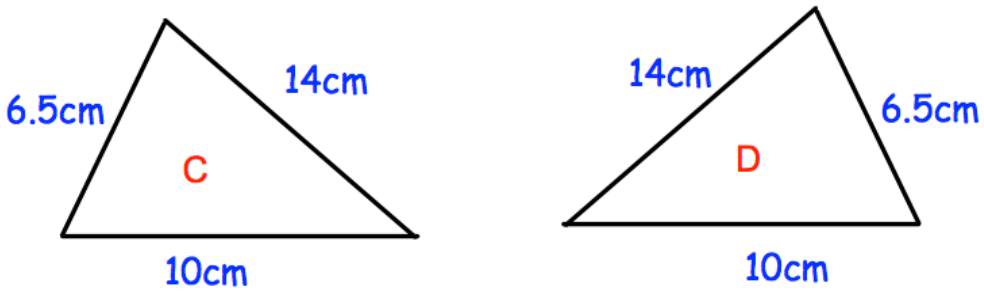
(a)




Condition: .....

**(1)**

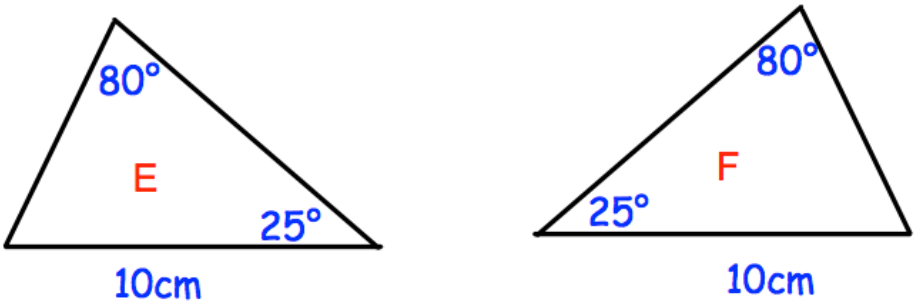
(b)




Condition: .....

**(1)**

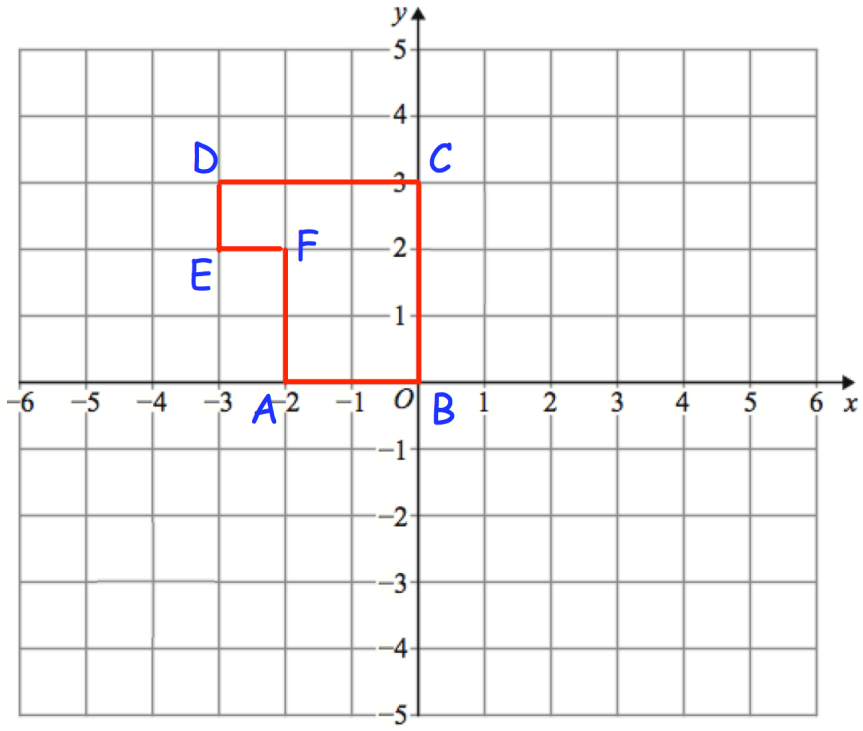
(c)




Condition: .....

**(1)**

108. Here is shape ABCDEF



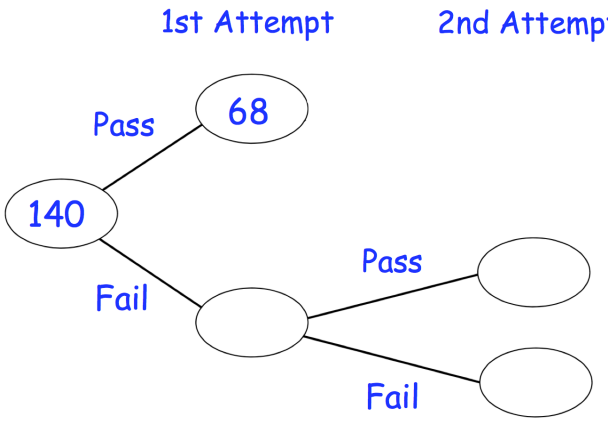

Describe fully a **single** transformation so that only vertex F is invariant.

……

……

……

109. 140 students sign up for a college course.
At the end of the course, each student has two attempts to pass a test.
If a student passes either attempt, they are awarded a certificate




85% of the students receive a certificate.

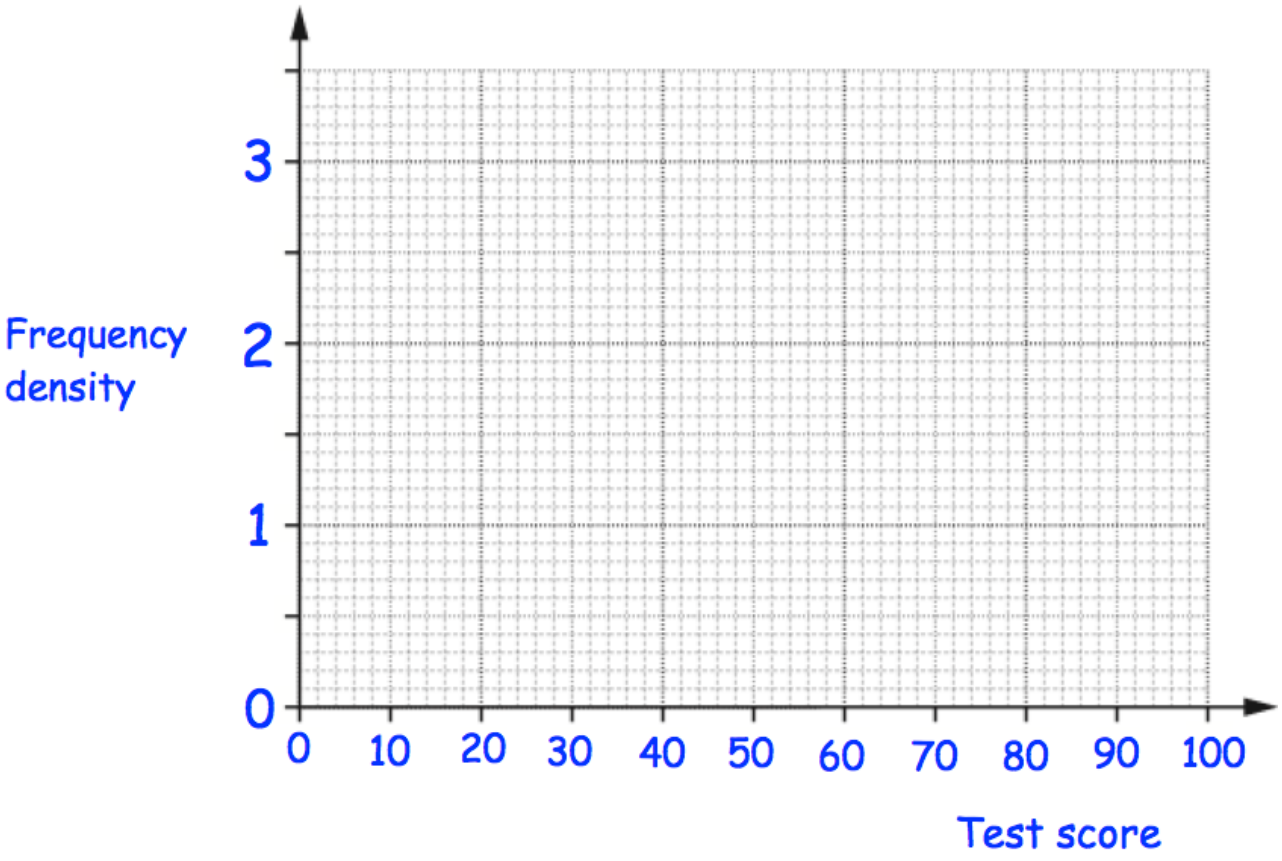
Work out how many students passed the test in their 2nd attempt.

**(3)**

110.
The test scores from the students in a school are summarised in the table.

| Test score, x | Frequency |
|---|---|
| $0 < x \leq 30$ | 15 |
| $30 < x \leq 40$ | 22 |
| $40 < x \leq 50$ | 28 |
| $50 < x \leq 70$ | 30 |
| $70 < x \leq 100$ | 9 |

Draw a histogram for this data.



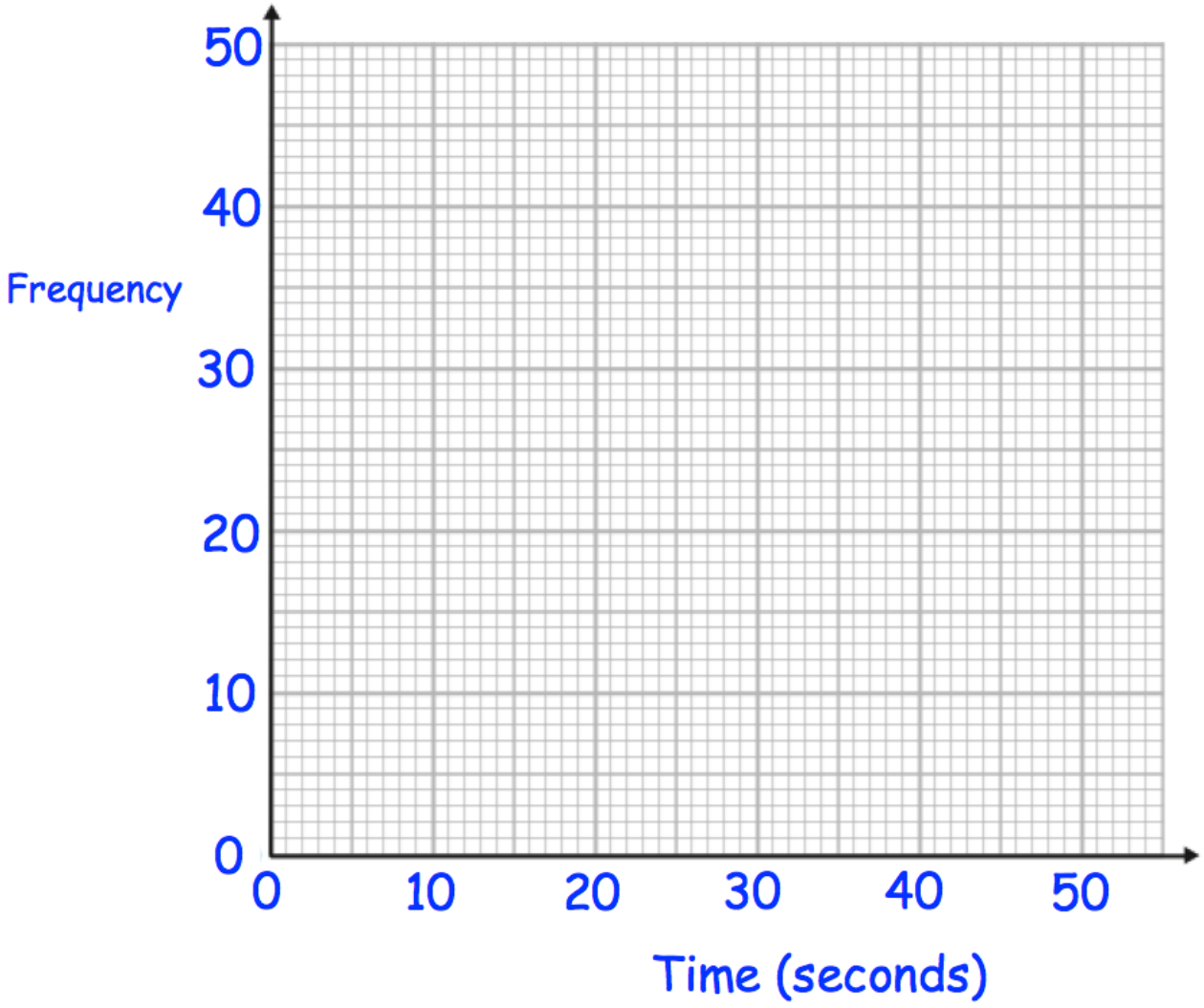

**(3)**

111.

The table gives information about the time taken, in seconds, for students to complete a puzzle.

| Time (seconds) | Frequency |
|---|---|
| $0 < t \leq 10$ | 7 |
| $10 < t \leq 20$ | 25 |
| $20 < t \leq 30$ | 38 |
| $30 < t \leq 40$ | 16 |
| $40 < t \leq 50$ | 12 |

Draw a frequency polygon for the information in the table.




**(2)**

112. The stem and leaf diagram shows information about the ratings of 11 footballers in a computer game.

Key: 6 | 8 means 68

| | |
|---|---|
| 6 | 8 |
| 7 | 5 5 7 |
| 8 | 3 4 6 8 9 |
| 9 | 0 1 |

(a) How many of the footballers had a rating less than 85?

.....

**(1)**

(b) Write down the mode.

.....

**(1)**

(c) Work out the range of the ratings.

.....

**(1)**

(d) Work out the median rating.

.....

**(1)**

---

113. Here are the ages of 11 friends.

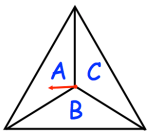
34 38 39 40 40 43 44 46 49 50 57

Work out the interquartile range of the ages.

.....

**(2)**

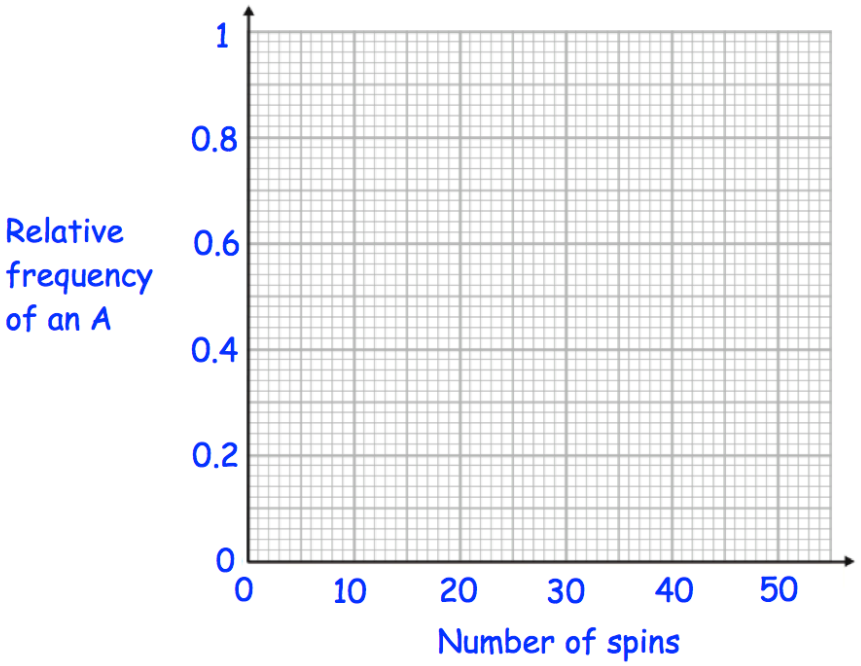
114. A three-sided spinner is labelled A, B and C.




The spinner is spun and the frequency the letter A is recorded every 10 spins.
The table below shows this information.

| Spins | 10 | 20 | 30 | 40 |
|---|---|---|---|---|
| Frequency of an A | 5 | 12 | 21 | 26 |

(a) Complete plot the relative frequencies on the graph below.




**(3)**

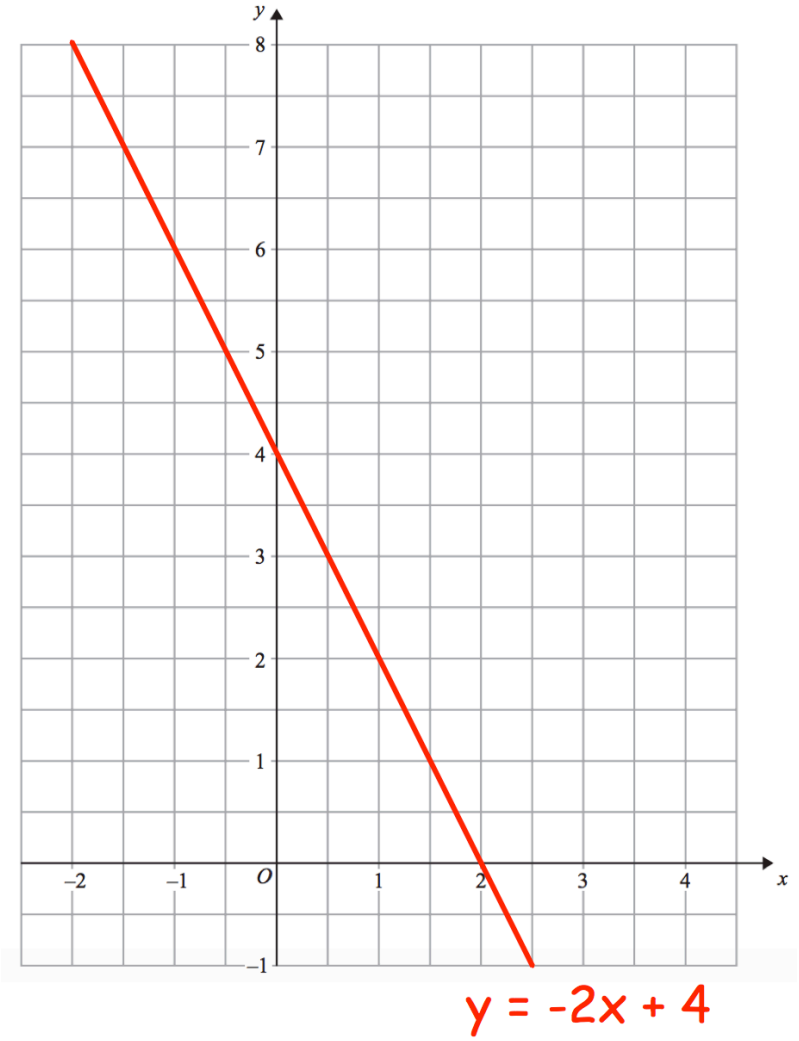
(b) Neil says the relative frequency after 50 spins is 0.8
Explain why Neil must be wrong

.....

.....

**(2)**

115. The straight line y = –2x + 4 has been drawn on the grid.




(a) On the same grid, draw the graph of y = x + 1

**(2)**

(b) Use the graphs to solve the simultaneous equations

$$y = -2x + 4$$

$$y = x + 1$$

.....

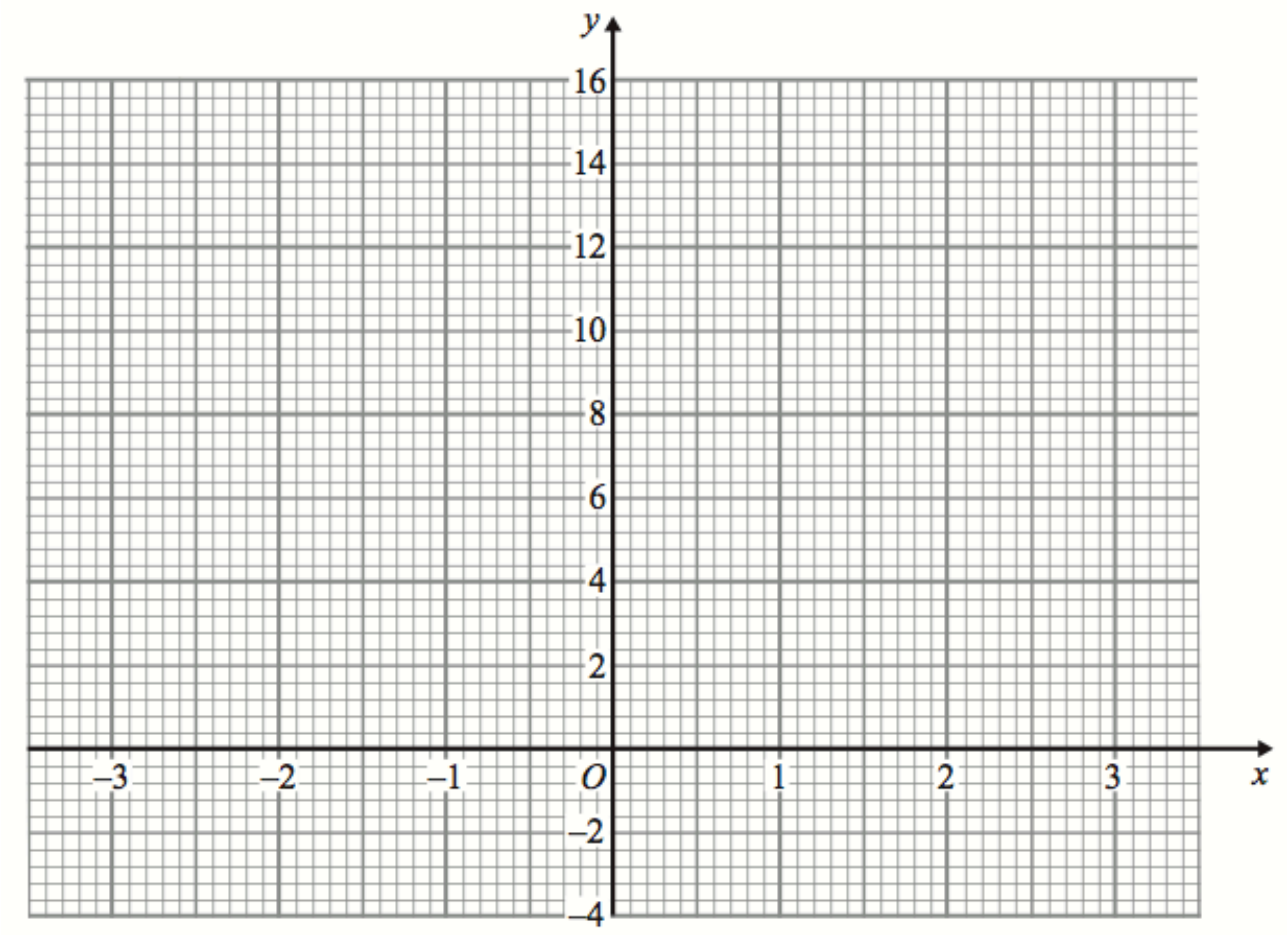
**(2)**

116. (a) Complete the table of values for $y = x^2 + 2x + 1$

| $x$ | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y$ | | | | | | | |

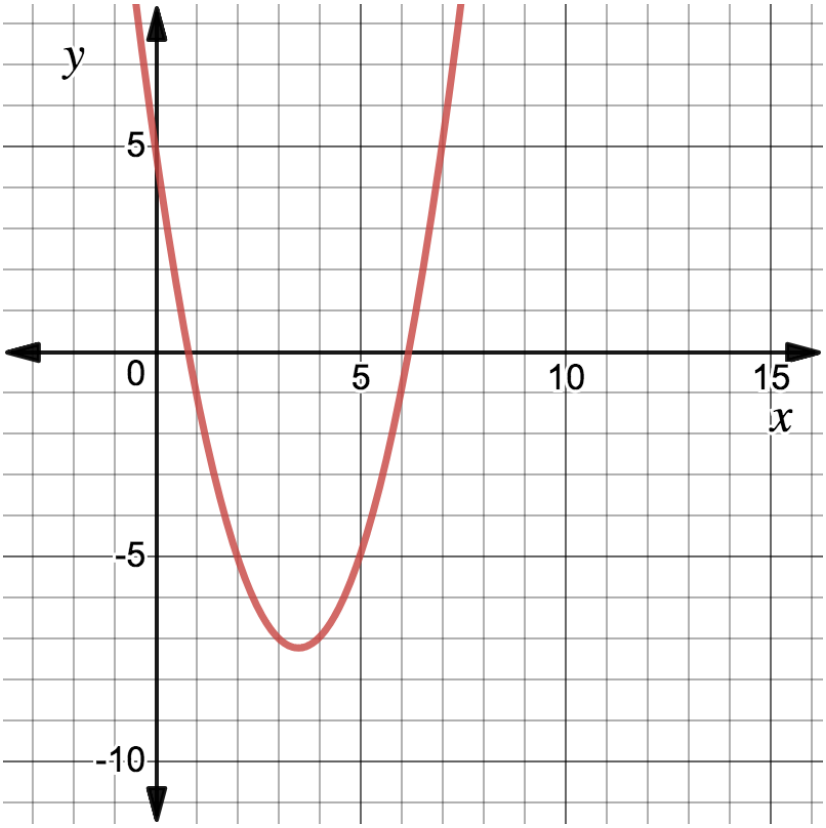
**(2)**

(b) On the grid, draw the graph of $y = x^2 + 2x + 1$ for the values of x from -3 to 3.




**(2)**

117. Shown below is the graph of $y = x^2 - 7x + 5$

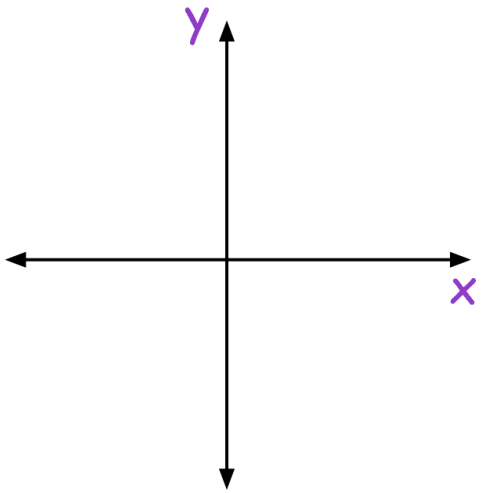



Use the graph to find estimates of the solutions of the equation
$x^2 - 7x + 5 = -3$

x = ..... and x = .....

**(2)**

118. Sketch the graph of $y = x^2 + 7x - 8$




**(3)**

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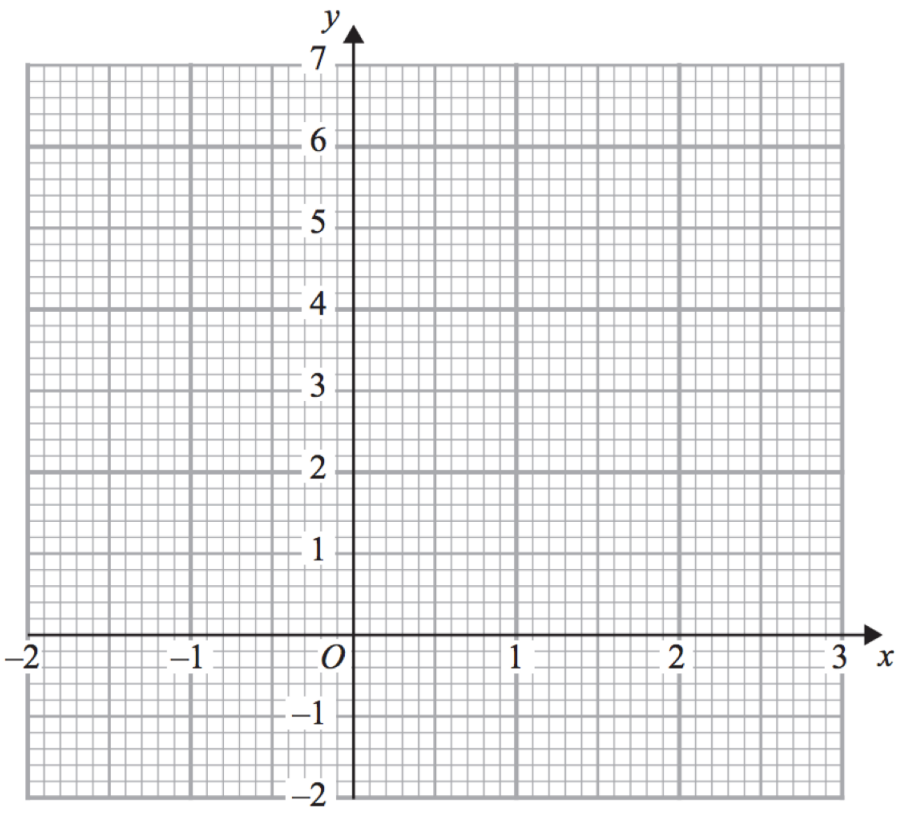
119. On the grid, draw the graph of $y = x^3 - 2x + 3$ for the values of x, $-2 \leq x \leq 2$




**(2)**