Every Topic on the Edexcel 2022 Advanced Information Practice Booklet Paper 2 (Calculator)

Higher Tier

GCSE Maths Tutor

How it all Works!

Work through the practice booklet, scan the code, watch the live tutorial and check your answers!

Try it out!

Answer ALL questions.
Write your answers in the spaces provided.
You must write down all the stages of your working.

1. a) 6.4 has been rounded to one decimal place.

Write down the error interval.

..... ≤ x < .....
(2 marks)

b) 6.4 has been truncated to one decimal place.

Write down the error interval.

..... ≤ x < .....
(2 marks)

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2. a) Work out $\sqrt[3]{\frac{4.3 \times tan39^o}{23.4-6.06}}$

Write down all the digits on your calculator display.

.....
(2 marks)

b) Round your answer to part (a) to 2 decimal places.

.....
(1 mark)

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3. a) Simplify $\frac{30x^2y^3}{6xy^2}$

.....
(2 marks)

b) Simplify $(2x^2y)^3$

.....
(2 marks)

4. a) Expand $b(3b + 7)$

.....
(1 mark)

b) Expand $3y(5 - 4y)$

.....
(2 marks)

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5. Expand and Simplify $3(5x + 4) - 2(3x - 2)$

.....
(3 marks)

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6. a) Expand and Simplify $(x + 3)(x - 5)$

.....
(1 mark)

b) Expand and Simplify $(2x - 3)(3x - 4)$

.....
(2 marks)

7. a) Factorise $3x + 15$

.....
(1 mark)

b) Factorise fully $35x - 21x^2$

.....
(2 marks)

8. a) Factorise $x^2 + 7x + 12$

.....
(2 marks)

b) Factorise $x^2 - 3x - 28$

.....
(2 marks)

9. a) Solve $3x + 5 = 26$

.....
(1 mark)

b) Solve $5x - 2 = 21$

.....
(1 mark)

10. Solve $5x - 3 = 3x + 9$

.....
(2 marks)

11. Adam, Brian and Chris are work colleagues.

Adam is 8 years older that Chris

Brian is twice as old as Adam

The sum of their ages is 92 years.

How old are Adam, Brian and Chris?

Adam: .....

Brian: .....

Chris: .....

(3marks)

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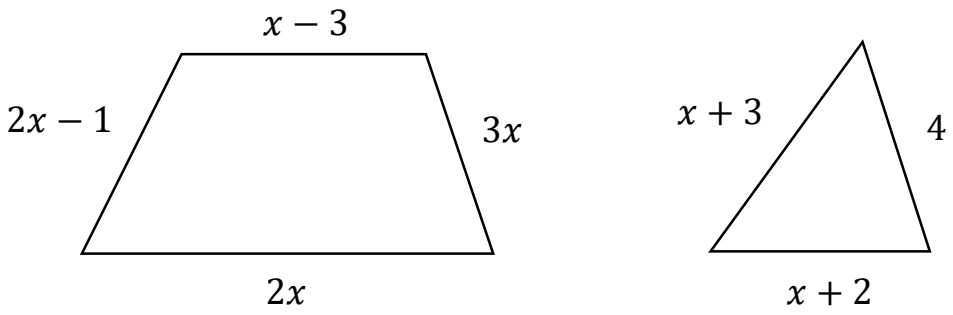
12. The perimeter of the quadrilateral is double the perimeter of the triangle.

All measurements are in centimetres.



Work out the perimeter of the triangle.

.....

(4 marks)

13. Here are the equations of three straight lines.

Line 1: $2y = 6x + 5$

Line 2: $y + 3x = 5$

Line 3: $3x - y = 5$

Which two of these lines are parallel?

Explain your reasoning.

.....

(3 marks)

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14. a) Solve $x^2 - 5x - 24 < 0$

.....

(3 marks)

b) Solve $x^2 - 5x - 24 > 0$

.....

(3 marks)

15. Given that $f(x) = 2x - 4$ and $g(x) = x^2 + 5$

a) Work out an expression for $f^{-1}(x)$

.....

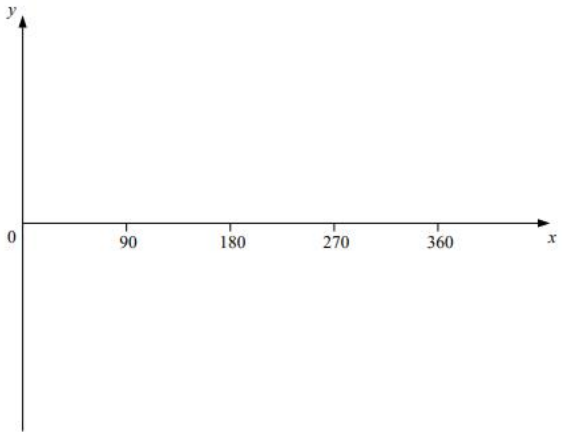
(2 marks)

b) Work out an expression for $gf(x)$

.....

(2 marks)

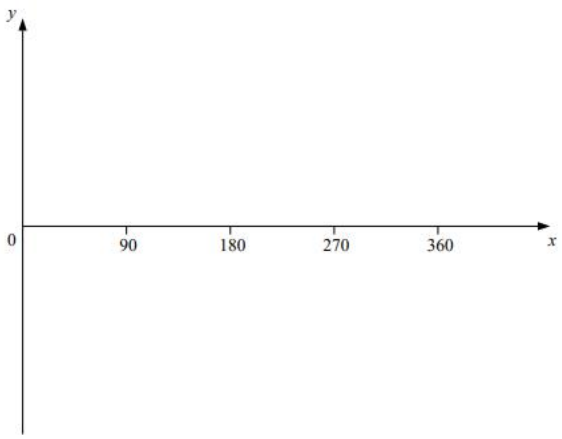
16. a) On the grid, sketch the graph of $y = \sin(x)$ for $0 \leq x \leq 360$



.....

(2 marks)

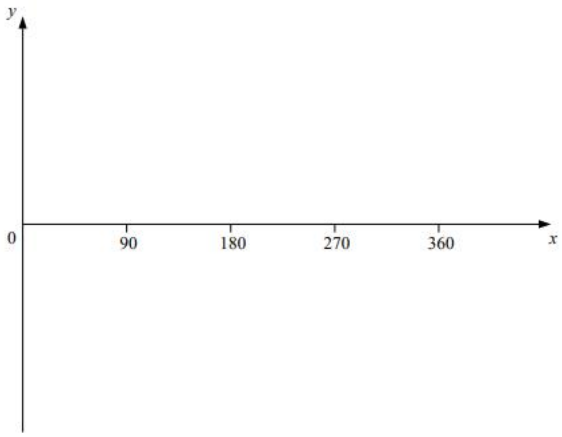
b) On the grid, sketch the graph of $y = \cos(x)$ for $0 \leq x \leq 360$



.....

(2 marks)

17. On the grid, sketch the graph of $y = \tan(x)$ for $0 \leq x \leq 360$



.....

(2 marks)

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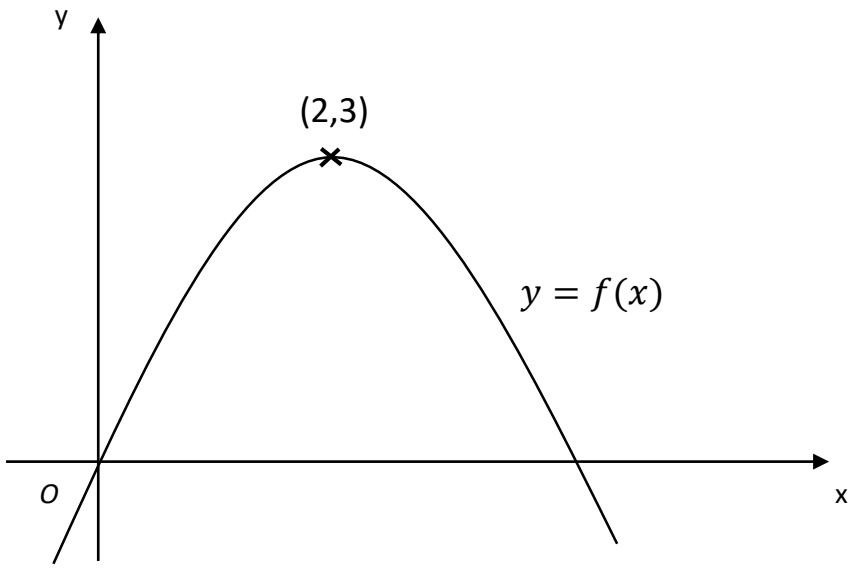
18. The diagram shows part of a curve with equation $y = \mathrm{f}(\mathrm{x})$

The maximum point of the curve has the coordinates (2,3)



Write down the coordinates of the maximum point with equation

a) $y = \mathrm{f}(\mathrm{x} - 2)$

.....

(1 mark)

b) $y = \mathrm{f}(\mathrm{x}) - 1$

.....

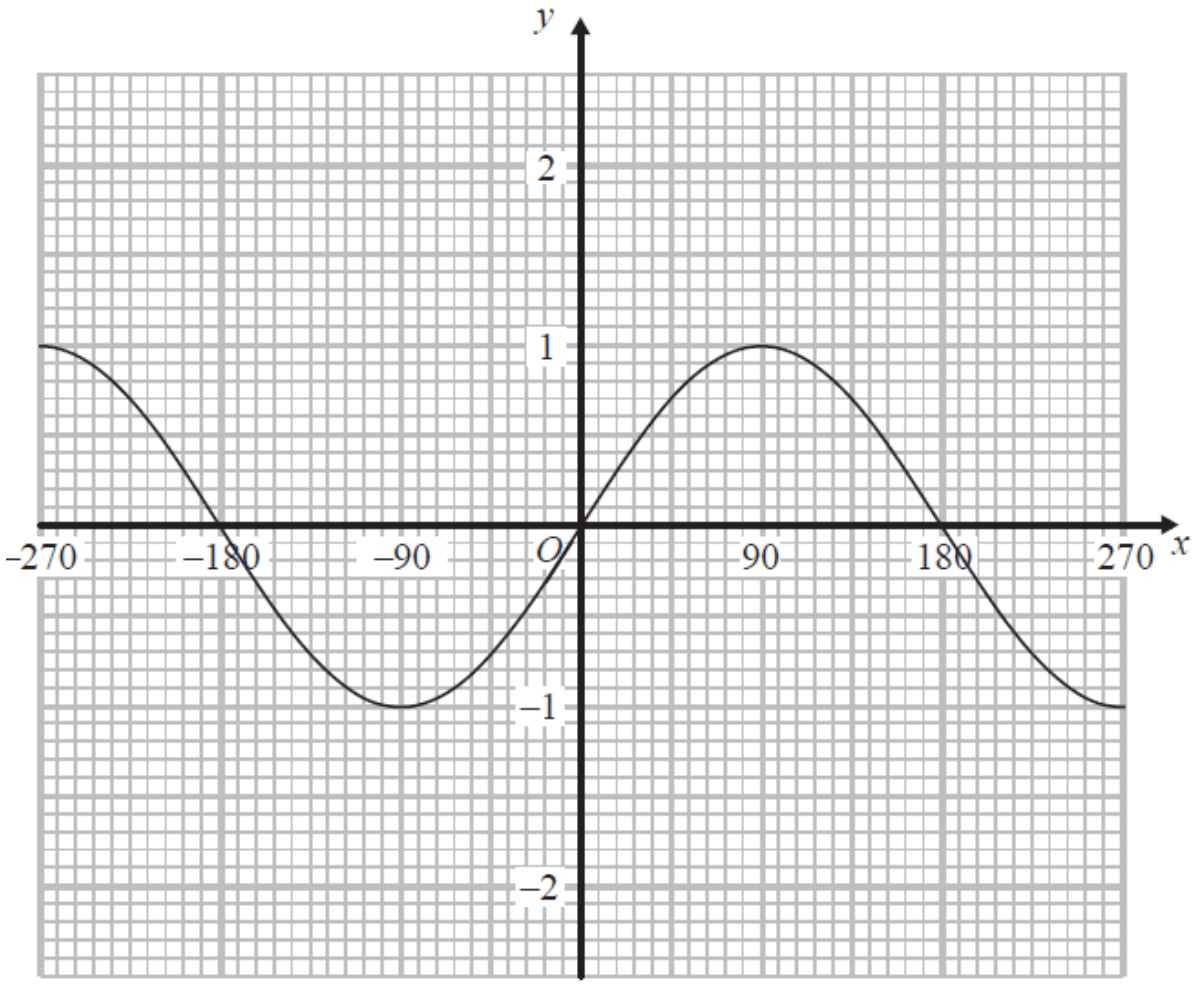
(1 mark)

c) $y = \mathrm{f}(-\mathrm{x})$

.....

(1 mark)

19. The graph of $y = sinx^o$ for x values from -270 to +270 is shown below.

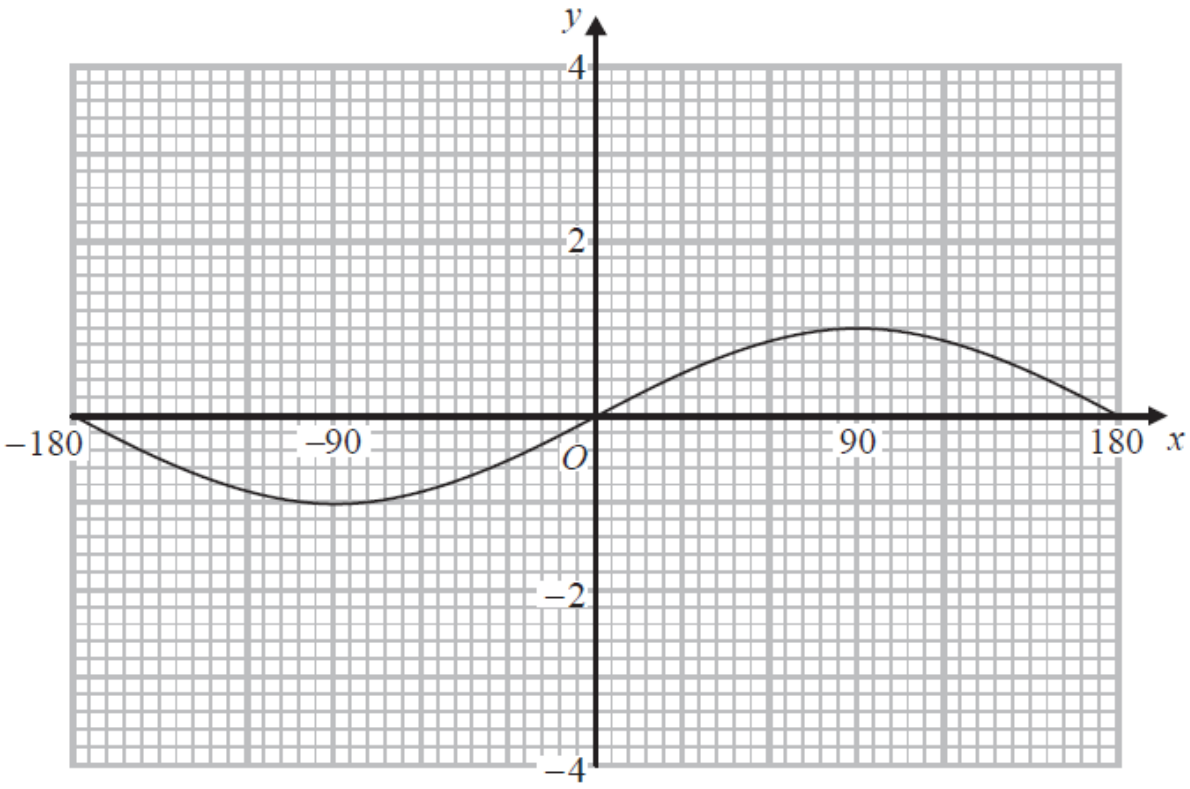


On the same axes,

sketch the graph of $y = 1 - \sin(x)$ for values of x from -270 to +270

(2 marks)

20. The graph of $y = sinx^o$ for $-180 \leq x \leq 180$



On the grid above,

sketch the graph of $y = \sin x^o + 2$ for $-180 \leq x \leq 180$

(2 marks)

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21. Mary buys a car for £4000.

Each year it depreciates by 20%.

Work out the value of the car in 3 years.

.....

(2 marks)

22. Emily and James share some money in the ratio 4:7

James receives £21 more than Emily.

How much do they share between them?

.....

(3 marks)

23. a:b is in the ratio 3:5 and b:c is in the ratio 2:1

Work out the ratio a:b:c

.....

(3 marks)

24. A mobile phone costs £480 in the UK

The same phone costs $600 in America

The exchange rate is £1 = $1.29

Which country offers the phone for the cheapest price?

You must show your working out.

.....

(2 marks)

25. 3 tins of beans and 4 jars of jam weigh 2080g

The total weight of 5 tins of beans is 1800g

Work out the weight of 1 tin of beans and 1 jar of jam.

.....

(3 marks)

26. 6 taps take 3 hours to fill a tank with water.

a) How long will it take 9 taps to fill the same tank with water?

.....

(2 marks)

b) State one assumption that you made in working out your answer to part (a).

.....

.....

(2 marks)

27. A is inversely proportional to B

When A = 15, B = 4

Find the value of A when B = 12

.....

(3 marks)

28. A is directly proportional to the square root of B

When A = 18, B = 16

Find the value of B when A = 2

.....

(3 marks)

29. $Pressure = \frac{Force}{Area}$

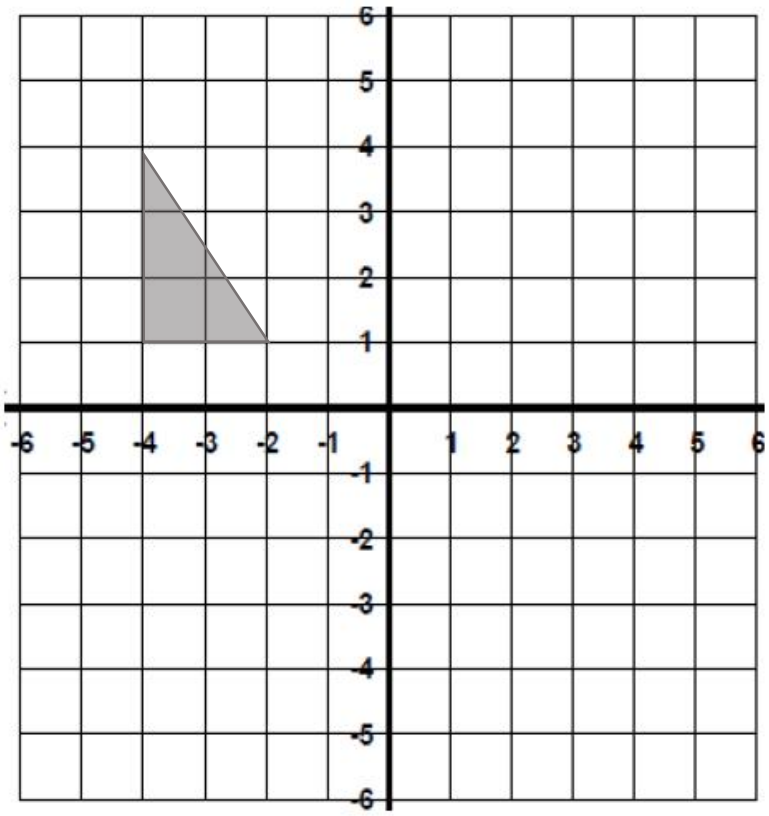
Find the pressure exerted by a force of 900 newtons on an area of $60cm^2$

Give your answer in $newtons/m^2$

.....

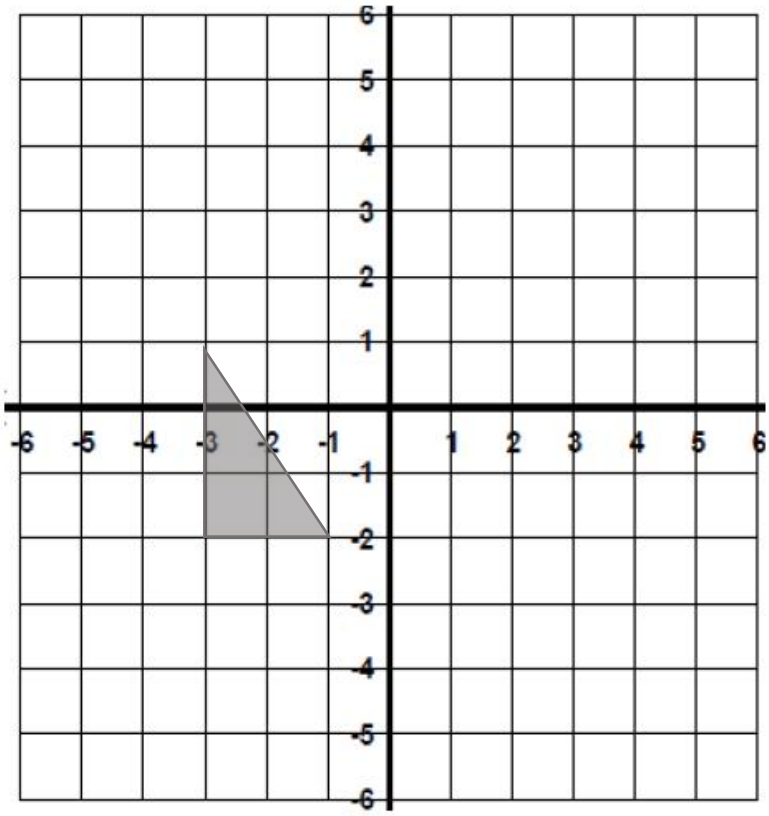
(3 marks)

30. a) Translate the shaded shape by the vector $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$



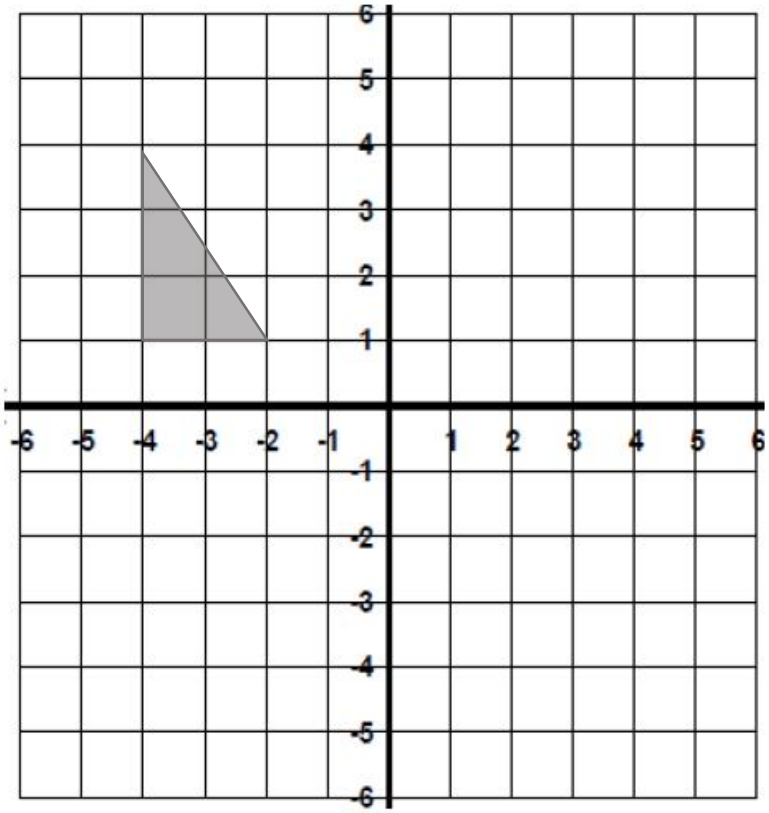
(2 marks)

b) Reflect the shaded shape in the line $x = 1$



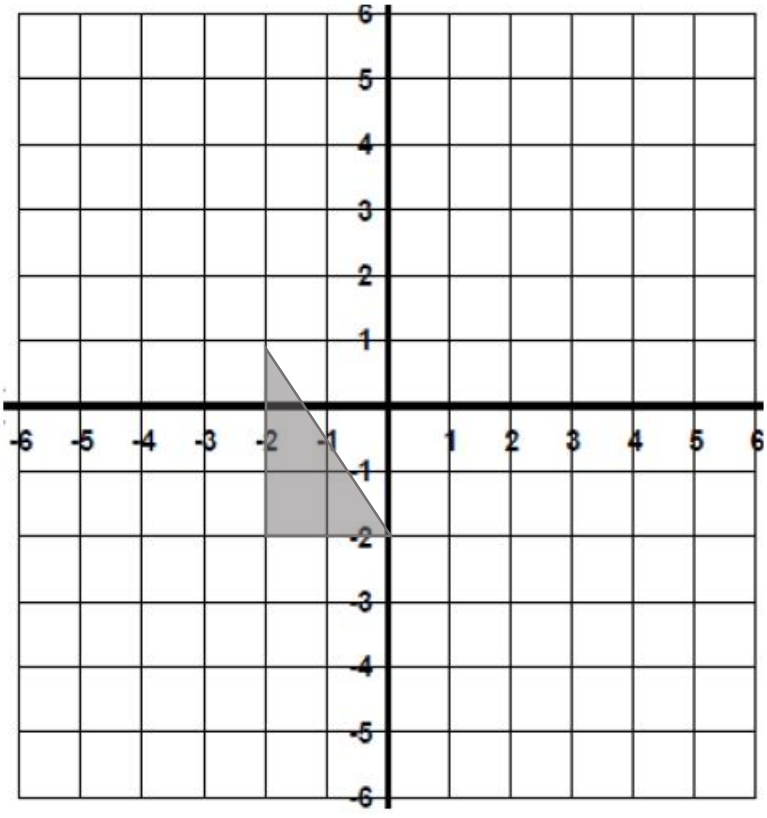
(2 marks)

31. a) Rotate the shaded shape 90° clockwise about the point (-1,0)



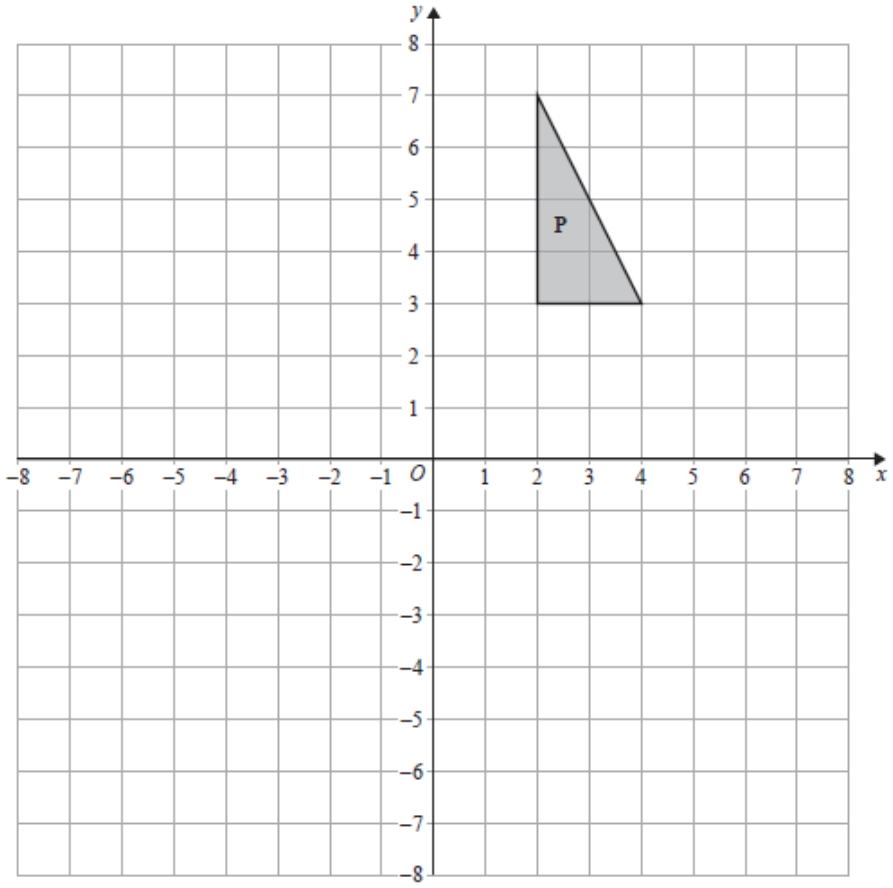
(2 marks)

b) Enlarge the shaded shape by a scale factor of 2 from the point (-4,-3)



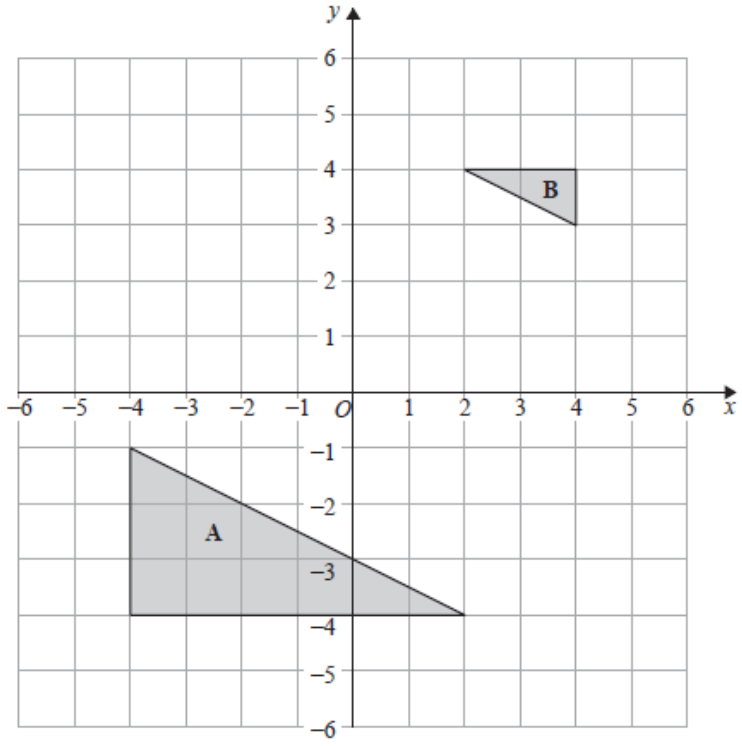
(2 marks)

32. Enlarge shape P with a scale factor $-\frac{1}{2}$ with centre of enlargement (0,0)



(2 marks)

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



.....

(2 marks)

34.

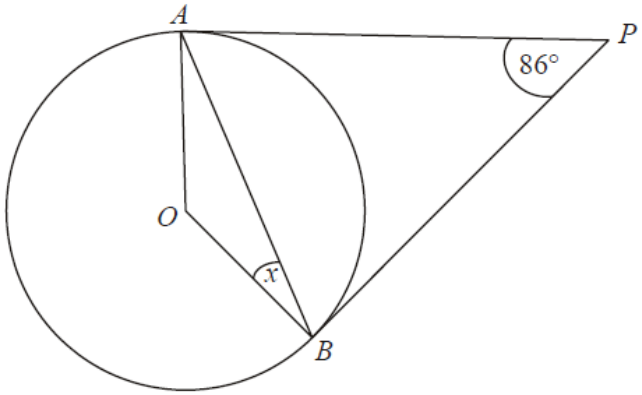


Diagram **NOT** accurately drawn

A and B are points on the circumference of a circle, centre O.

PA and PB are tangents to the circle.

Angle APB is 86°

Work out the size of the angle marked x.

.....

(3 marks)

35.

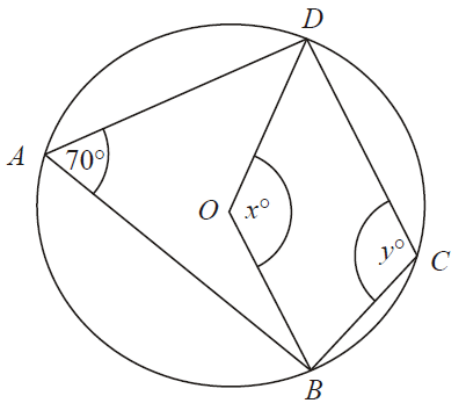


Diagram **NOT** accurately drawn

In the diagram A, B, C and D are points on the circumference of the circle, centre O.

a) Work out the value of x

.....

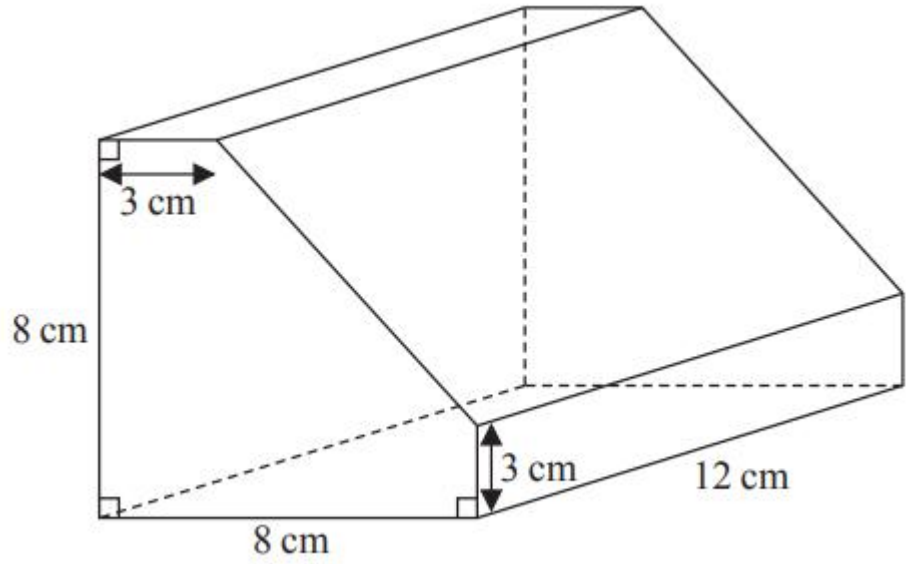
(1 mark)

b) Work out the value of y.

.....

(1 mark)

36. Here is a solid prism.



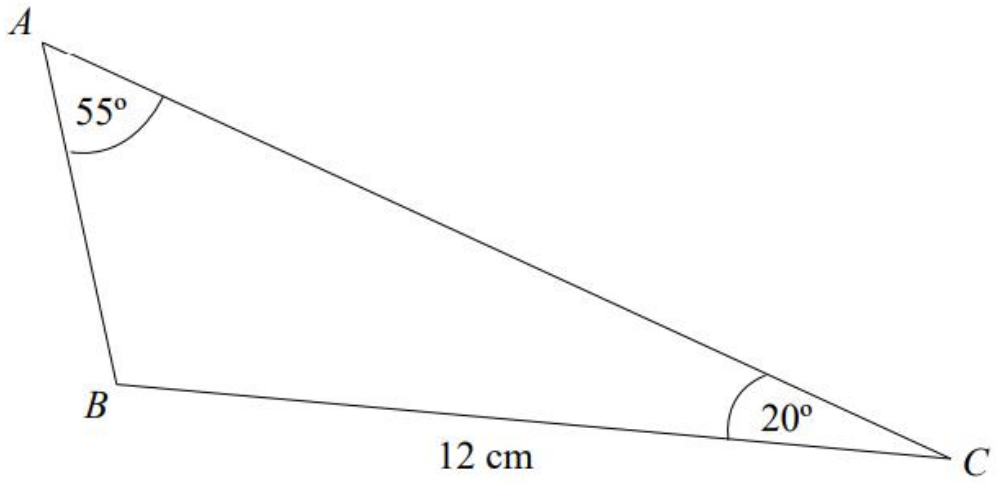
Work out the volume of the prism.

You must show all your working.

.....

(4 marks)

37.



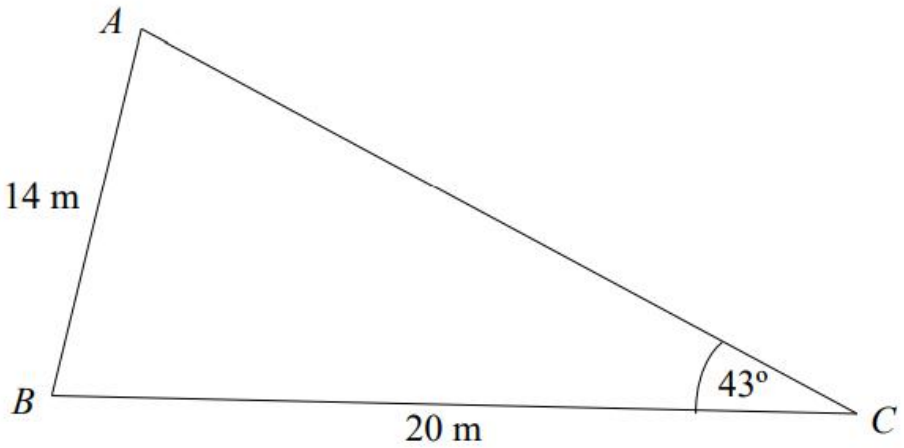
Work out the length of AC.

Give your answer to 2 decimal places.

.....

(3 marks)

38.

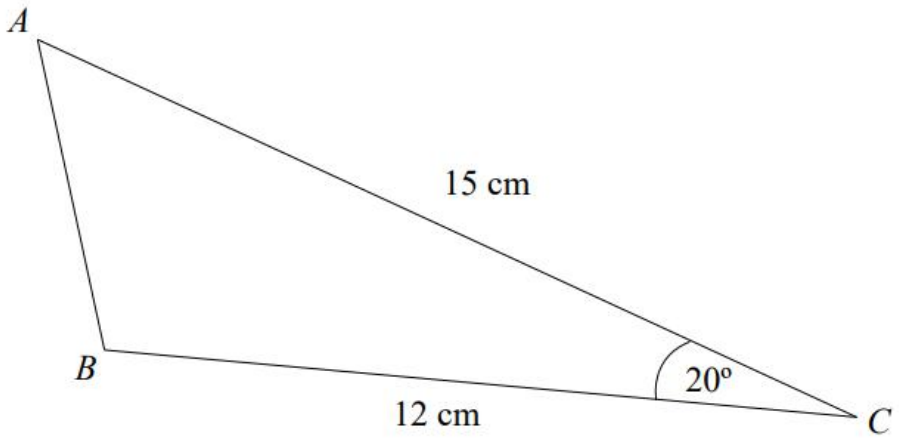


Work out the size of angle BAC.
Give your answer to the nearest degree.

.....

(3 marks)

39.



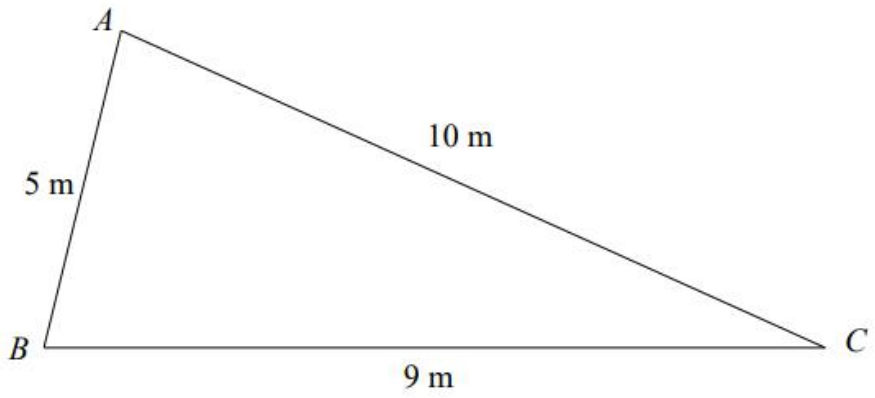
Work out the length of AB

Give your answer to 2 decimal places.

.....

(3 marks)

40.



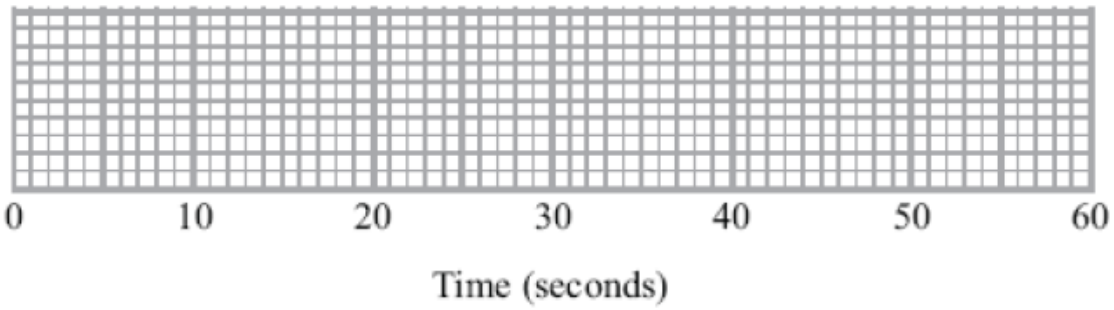
Work out the size of angle ABC

Give your answer to 1 decimal place.

41. Here are the times, in seconds that 15 people waited to be served at Rose's garden centre.

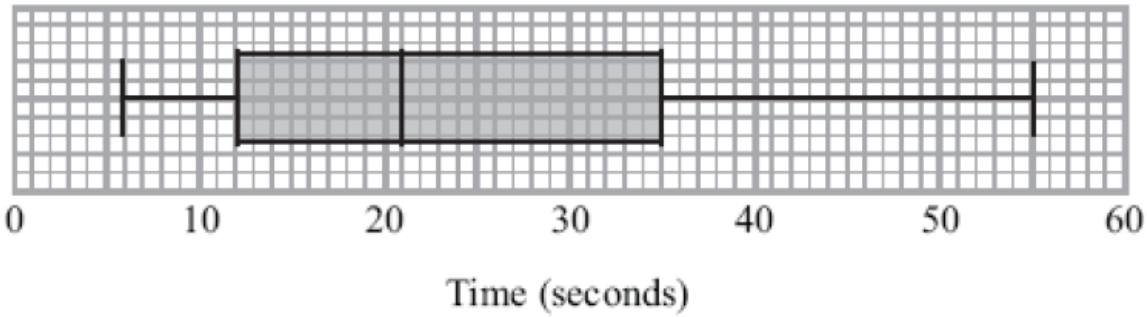
5 9 11 14 15 20 22 25 27 27 28 30 32 35 44

a) On the grid, draw a box plot for this information.



(3 marks)

The box plot shows the distribution of the times that people waited to be served at Green's garden centre.



b) Compare the distribution of the times that people waited at Rose's garden centre and the distribution of the times that people waited at Green's garden centre.

……

……

……

(3 marks)

42. James has a bag full of counters.

He takes a random sample of 20 counters and marks them all before putting them back into the bag.

He then takes 30 counters at random from the bag.

Out of the 30 counters 5 of them are marked.

Estimate how many counters are in the bag.

.....

(3 marks)

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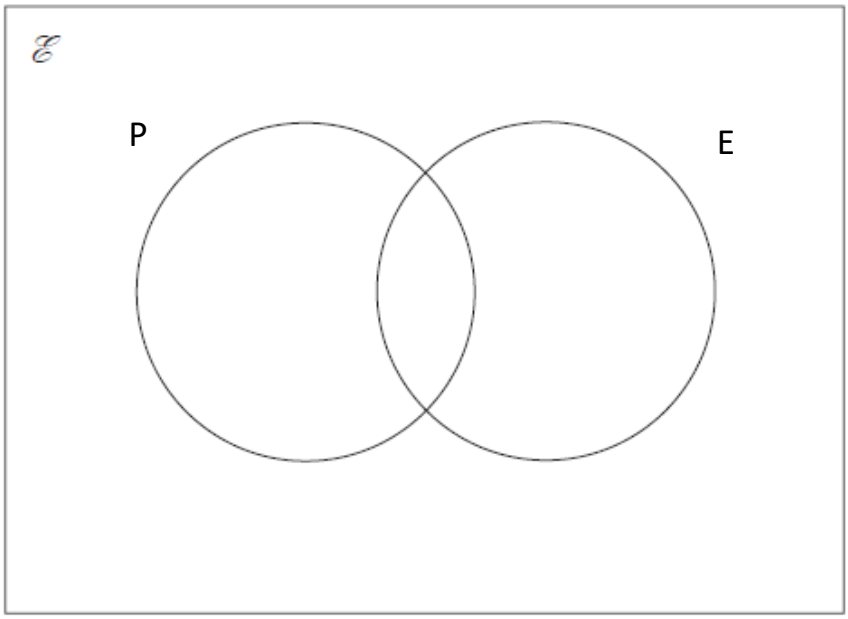
43. $\mathscr{E}$ = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15}

P = Prime numbers

E = Even numbers

a) Complete the Venn diagram.



(4 marks)

A number is chosen at random from the universal set $\mathscr{E}$.

b) Work out the probability that the number is in the set P ∩ E

.....

(2 marks)

44. Sophia asked 50 people which drinks they liked from tea, coffee and milk.

All 50 people like at least one of the drinks.

19 people like all three drinks.

16 people like tea and coffee but do not like milk.

21 people like coffee and milk.

24 people like tea and milk.

40 people like coffee.

1 person likes only milk.

Sophia selects at random one of the 50 people.

Work out the probability that this person likes tea.

.....

(5 marks)

45. 82 students were asked what their favourite fruits were.

39 liked apples

50 likes bananas

39 liked oranges

21 liked apples and bananas

18 liked bananas and oranges

19 liked apples and oranges

22 liked exactly two of the fruits

How many of the students liked apples and oranges but not bananas?

.....

(5 marks)

End of Paper