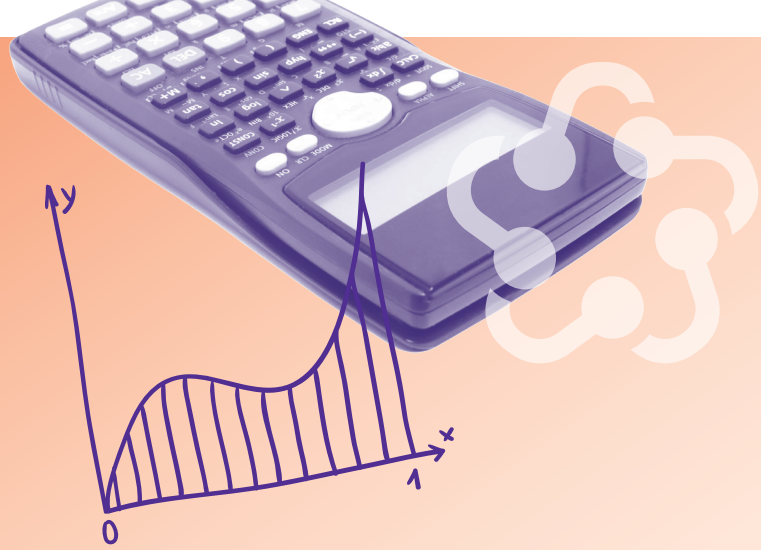
AQA
Realising potential



GCSE Maths Focus on:

A03 exam questions

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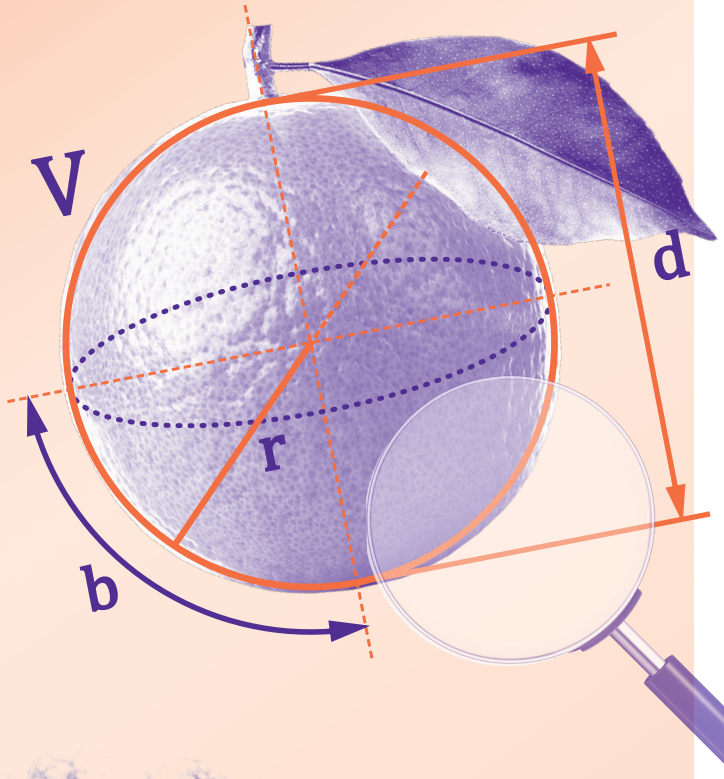

Activities booklet

AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee registered in England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX.

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AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee registered in England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX.

What is AO3?

Activity 1

Using the Ofqual strands for AO3 (Handout booklet), read the different strands and elements and highlight the skills students need to develop in lessons.

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What strand of A03 is being assessed?

Activity 2

Using the Ofqual strand document from Activity 1, identify which strand these questions are targeting.

Practice Paper Set 3 Paper 2 Foundation Tier

20 Kris is simplifying $3n^5 \times 2n^4$

His answer is $5n^{20}$

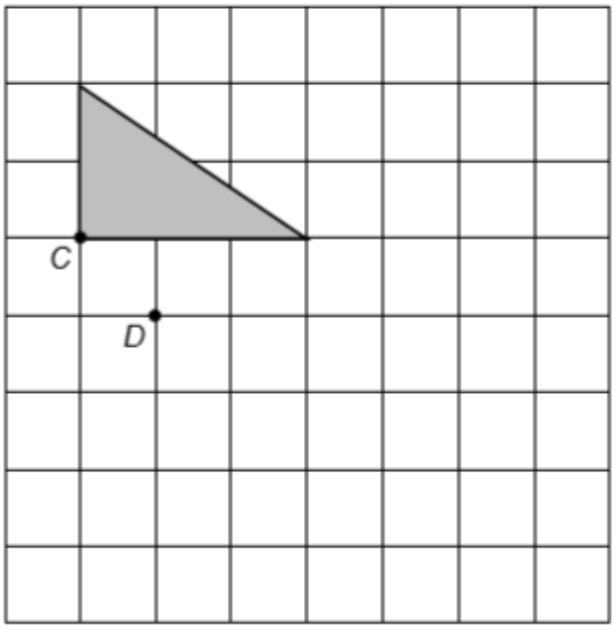
Identify any mistakes he has made.

[2 marks]

Practice Paper Set 1 Paper 1 Foundation Tier

19 (b) Rotate the triangle **90° clockwise** so that point *C* moves to point *D*.

[2 marks]



Practice Paper Set 3 Paper 1 Foundation Tier

Please note we are asking about part b only (part a is still needed though).

23 The air pressure in a tyre measures 7.2 bar.
Air is leaking out at the rate of 0.2 bar per day.

23 (a) Assume that the air continues to leak at the same rate.

After how many days will the pressure measure 4.8 bar?

[2 marks]

23 (b) In fact, the rate that the air leaks out increases each day.

How does this affect your answer to part (a)?

[1 mark]

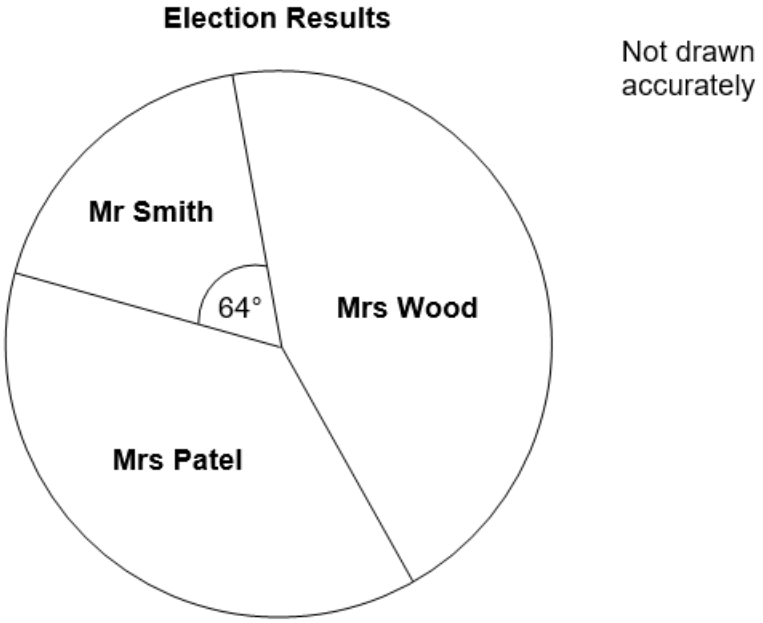
Practice Paper Set 4 Paper 1 Foundation Tier

17 Harry is tiling a wall of area 25 m^2
A tub contains 15 kg of tile cement.
The instructions say 2 kg of tile cement will tile 1 m^2 of wall.

17 (a) How many tubs does Harry need to buy?

[3 marks]

16 The pie chart shows some information about the share of votes for candidates in an election.



The angle for Mrs Wood would be 24° more than the angle for Mrs Patel.

There were 5220 votes in total.

Work out the number of votes for Mrs Patel.

[4 marks]

Practice Paper Set 1 Paper 1 Higher Tier

Please note we are asking about part b only.

13 Here is a map of France.

Scale: 1 cm represents 80 km

13 (a) Estimate the time it would take to drive from Paris to Marseille.

Assume

- the road is straight
- an average speed of 100 km/h

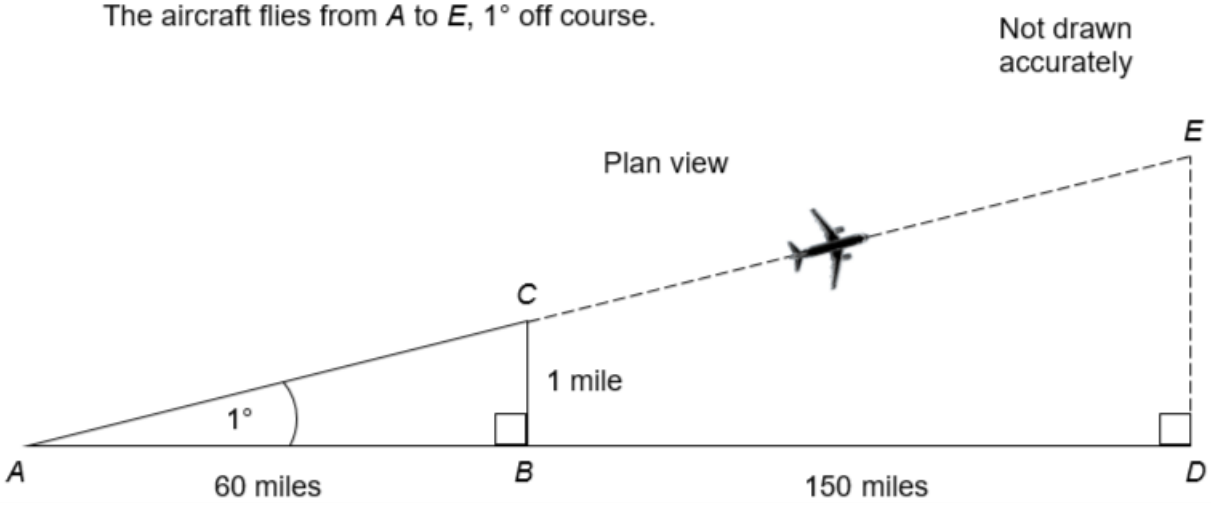
[4 marks]

13 (b) Comment on how each assumption affects the accuracy of your estimate.

[2 marks]

14 The pilot of an aircraft wants to fly from *A* to *D*.

The aircraft flies from *A* to *E*, 1° off course.



14 (b) How should the aircraft have turned at *C* to fly directly towards *D*?

Tick a box.

[1 mark]

1° clockwise ☐

between 1° and 2° clockwise ☐

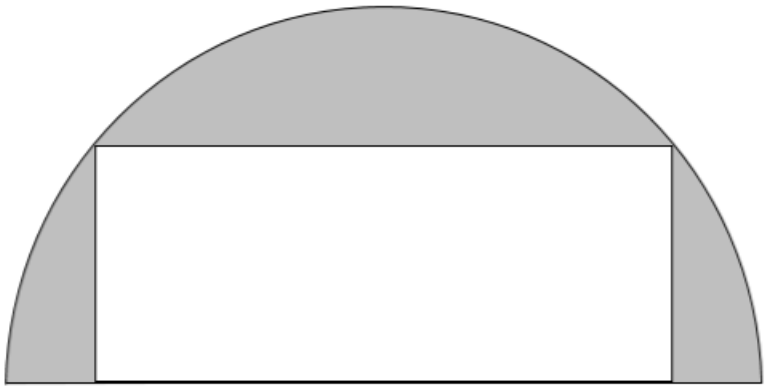
2° clockwise ☐

more than 2° clockwise ☐

17 The diagram shows a rectangle inside a semicircle.

The rectangle has dimensions 16 cm by 6 cm

Not drawn accurately



Work out the shaded area.

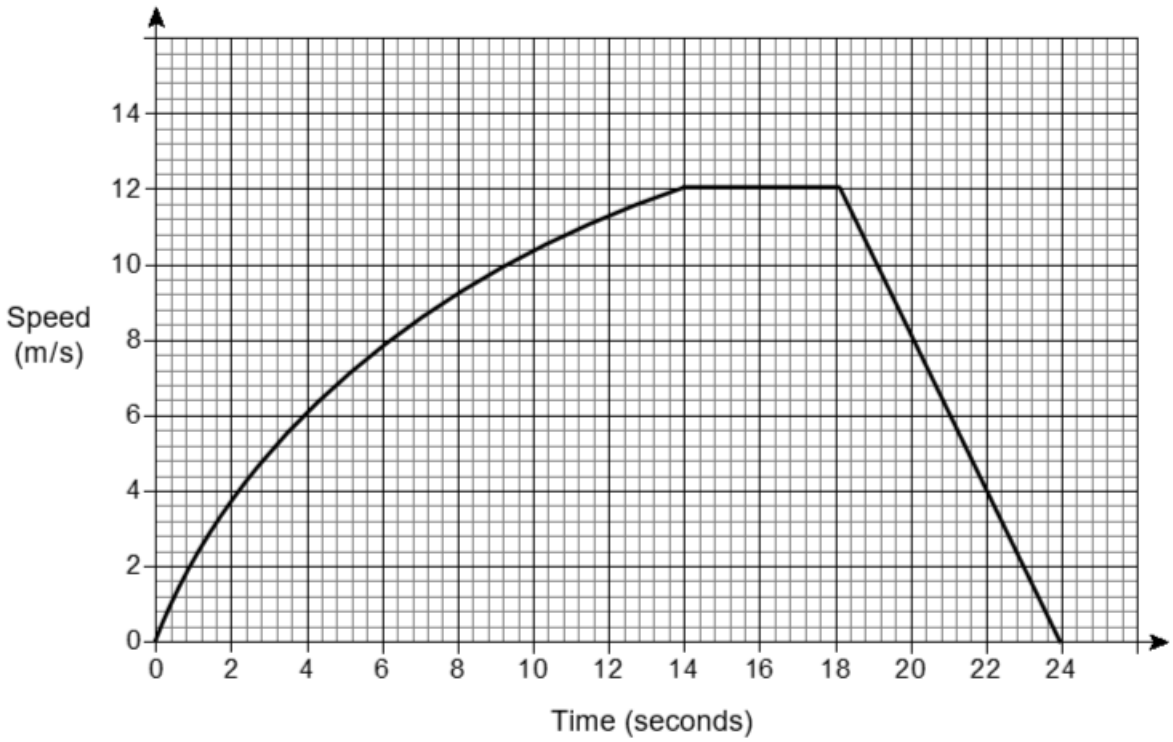
Give your answer in terms of π.

[4 marks]

Practice Paper Set 1 Paper 2 Higher Tier

Please note we are asking about part c only.

23 The speed-time graph for a car's journey is shown.



23 (b) Estimate the average speed of the car for the journey.

You **must** show your working.

[4 marks]

23 (c) Evaluate your answer to part (b).

Tick a box.

☐ underestimate ☐ exact ☐ overestimate

[1 mark]

Comment _____

A03 in the Curriculum

Activity 3 (Group Discussion): Notes

Do you think the teaching time allocated to this skill reflects this?

Do you think your students are developing their A03 skills as they progress from KS3 to KS4?

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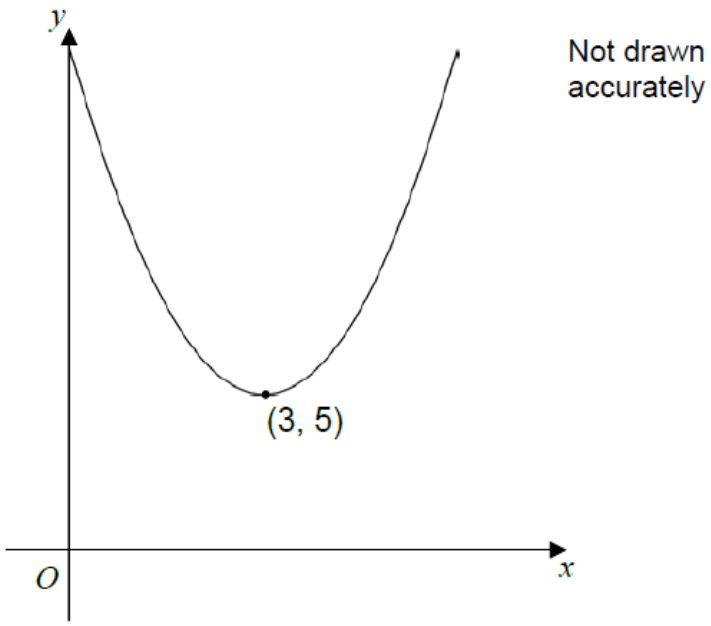
Exploring the strands of A03 further

Activity 4

A03.1a: Practice Paper Set 2 Paper 2 Higher Tier

22 (b) A sketch of $y = x^2 + cx + d$ is shown.

The turning point is (3, 5)



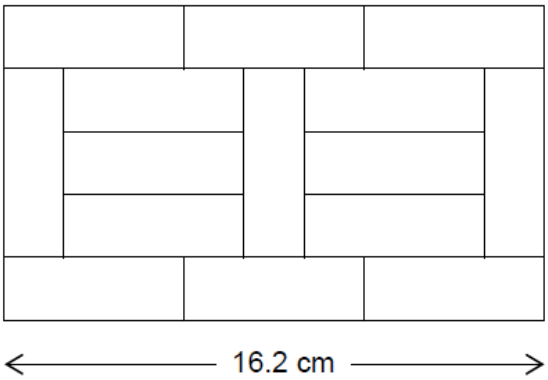
Work out the values of c and d.

[3 marks]

AO3.1b: Practice Paper Set 2 Paper 3 Foundation Tier

16 A shape is made using 15 identical rectangles.

Not drawn accurately



Work out the area of the shape.

[4 marks]

AO3.1c: Practice Paper Set 2 Paper 2 Foundation Tier

14 There are between 25 and 35 students in a class.

The ratio of boys to girls is 4 : 7

How many students are in the class?

[2 marks]

AO3.1d: Practice Paper Set 2 Paper 2 Foundation Tier

10 A bakery makes 480 pizzas and 2400 rolls each day.

In 1 hour each baker can make 20 pizzas **or** 75 rolls.

Each baker works for 8 hours a day.

10 (a) Work out the **minimum** number of bakers needed each day.

[4 marks]

AO3.1d: Practice Paper Set 2 Paper 3 Both Tiers

7 At a nursery, the mean age of 4 children is 31 months.

Katy joins the nursery.

The mean age of **all** 5 children is now 30 months.

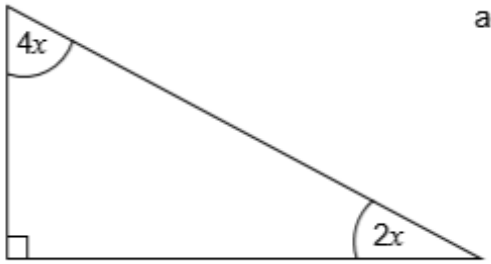
Work out the age of Katy.

[4 marks]

AO3.2 (& AO3.1b): Practice Paper Set 2 Paper 1 Foundation Tier

13 Work out the value of x.

Not drawn accurately



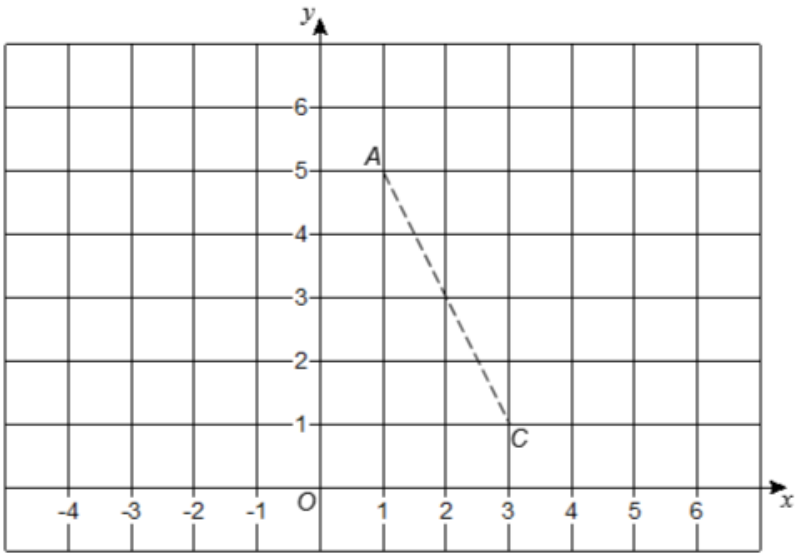
[3 marks]

AO3.2 (& AO3.1b): Practice Paper Set 3 Paper 1 Foundation Tier

28 *AC* is a diagonal of kite *ABCD*.

A is the point (1, 5)

C is the point (3, 1)



The diagonals of the kite intersect at *M*, the midpoint of *AC*.

$AM = BM$

$BM : MD = 1 : 2$

Work out possible coordinates for *B* and *D*.

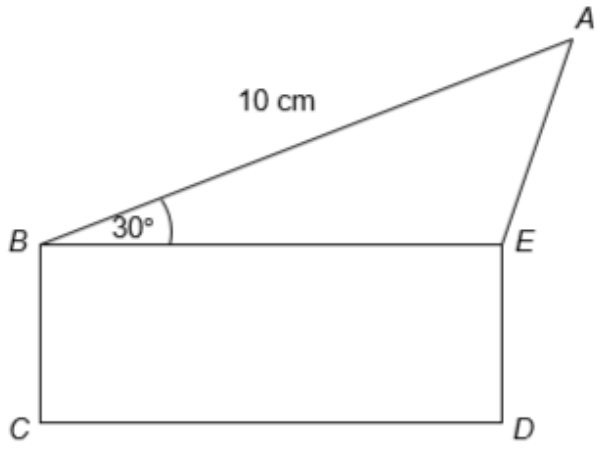
[2 marks]

AO3.2: Practice Paper Set 3 Paper 1 Higher Tier

21 The diagram shows a triangle *ABE* and a rectangle *BCDE*.

area *ABE* = area *BCDE*

BC is 2 cm shorter than *BE*.



Not drawn accurately

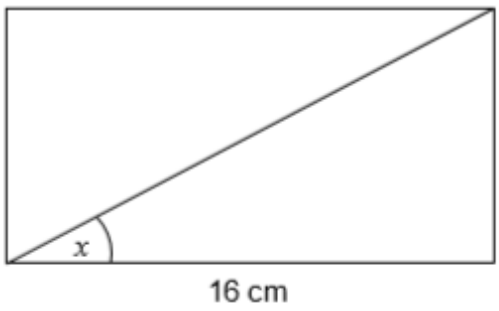
Work out the length of *BE*.

[4 marks]

AO3.2 (& AO3.1b): Practice Paper Set 3 Paper 2 Higher Tier

8 The area of the rectangle is 68 cm^2

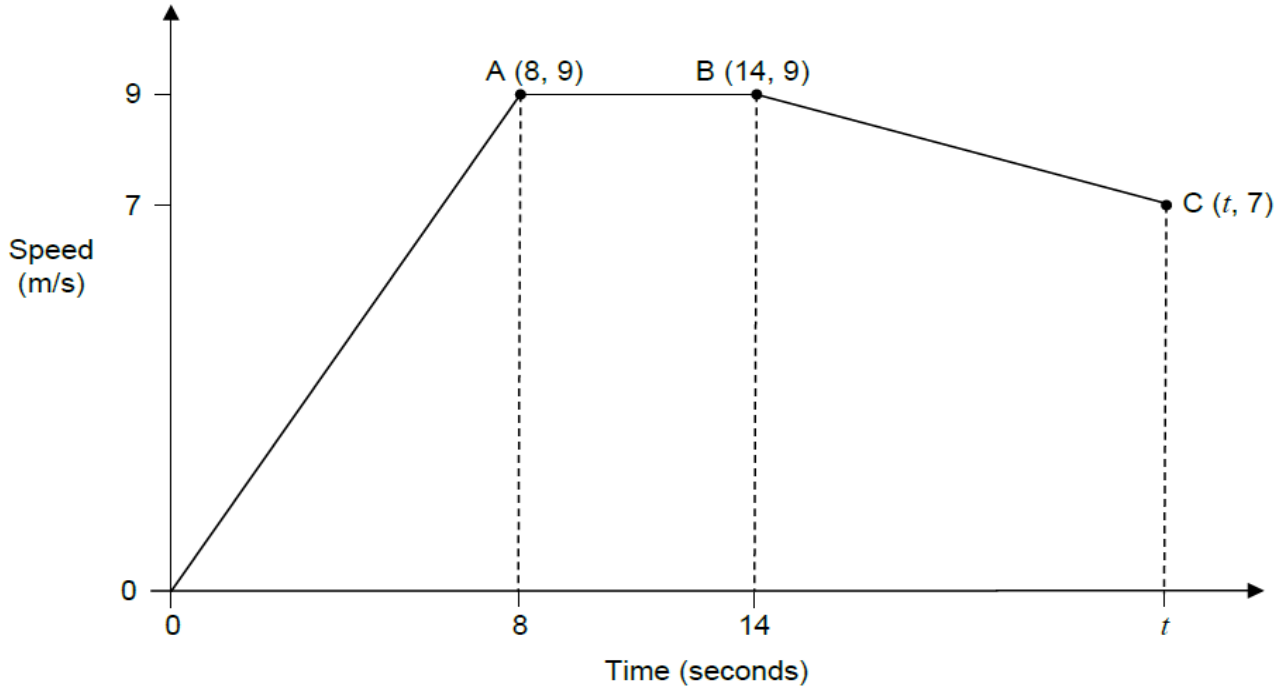
Not drawn accurately



Work out the size of angle x.

[3 marks]

27 Here is a sketch of a speed-time graph for part of a journey.



The average speed from 0 to t seconds was 7.2 m/s

Work out the value of t.

[5 marks]

AO3.3 (& AO3.1c): Practice Paper Set 2 Paper 1 Foundation Tier

10 In a quiz, teams are asked 20 questions.

Teams score

3 points for a correct answer

0 points for questions not attempted

–2 points for an incorrect answer.

10 (c) After 17 questions, Team C has 35 points.

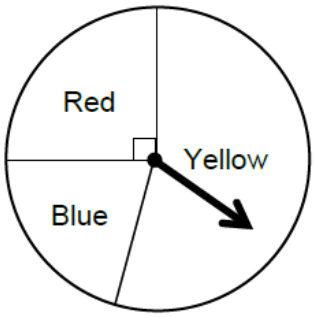
After 20 questions, Team C has 34 points.

How many of the last three questions are answered correctly, not attempted or answered incorrectly?

[2 marks]

AO3.4a: Practice Paper Set 2 Paper 1 Higher Tier

18 In a game, a fair spinner has three sections.



Not drawn accurately

18 (a) Joe uses this method to work out the probability of getting two reds from two spins.

He writes,

There are three colours, so the probability of the spinner landing on red is $\frac{1}{3}$

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$, *so the probability is* $\frac{2}{3}$

Make **two** criticisms of Joe's method.

[2 marks]

AO3.4b: Practice Paper Set 2 Paper 1 Both Tiers

8 Jack works out the answer to $\dfrac{\sqrt{98.5} - 12.1}{-0.8}$

He says the answer is negative.

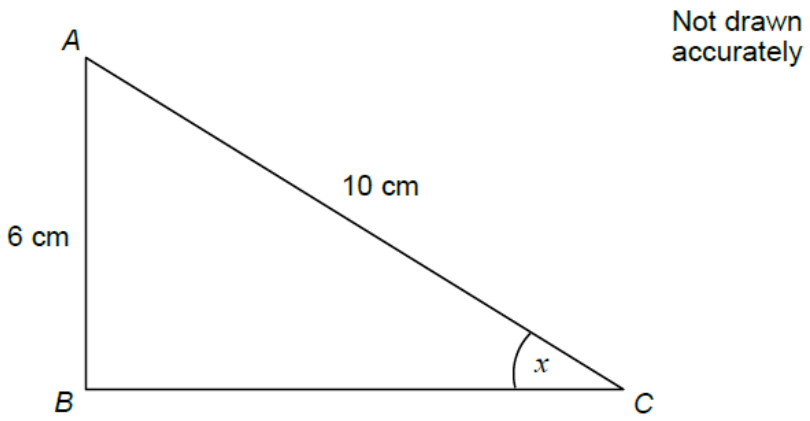
Is he correct?

You **must** show your working.

[2 marks]

AO3.5 (& AO3.1b): Practice Paper Set 2 Paper 3 Higher Tier

23



Kernal is using trigonometry to work out the size of angle x.

He assumes that angle *ABC* is a right angle.

In fact, the size of angle *ABC* is 85°

What is the effect of his assumption on the accuracy of his answer?

You **must** show your working.

[3 marks]

Notes

Notes

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