Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Centre Number | | | | | |

Candidate Number | | | | |

Thursday 4 June 2020

Morning (Time: 1 hour 30 minutes) | Paper Reference **1MA1/2F**

Mathematics

Paper 2 (Calculator)
Foundation Tier

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

Total Marks

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.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

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.

Turn over ▶

P62275A

1/1/1/1/

P 6 2 2 7 5 A 0 1 2 4

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write 0.37 as a fraction.

$0.37 = \frac{37}{100}$

$\frac{37}{100}$

(Total for Question 1 is 1 mark)

2 Write 29 381 correct to the nearest 1000

29 381

Hundreds column, look at 9381

9381 rounds down to 9000

so 29381 → 29000

29000

(Total for Question 2 is 1 mark)

3 Simplify $3e - e + 4e$

$3e - e + 4e = 2e + 4e = 6e$

start with this

Now we're only dealing with 2 terms

6e

(Total for Question 3 is 1 mark)

4 Write $\frac{1}{4}$ as a percentage.

① Convert to decimal

② Multiply by 100 to convert to percentage

① $\frac{1}{4} = 1 \div 4 \rightarrow 4\overline{)1.00}$ = 0.25

② so $\frac{1}{4} = 0.25$

$0.25 \times 100 = 25\%$

25 %

(Total for Question 4 is 1 mark)

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5 Here is a list of numbers.

3 4 9 18 27 30 36

From the numbers in the list, write down a cube number.

A cube number is made up of the same number multiplied by itself 3 times.

$27 = 3 \times 3 \times 3 = 3^3$

∴ 27 is a cube number

27

(Total for Question 5 is 1 mark)

6 Liz is watching a film at the cinema.

The film started at 1430
The film is 105 minutes long.

When the film ends, Liz takes 20 minutes to get to the bus stop.

A bus leaves the bus stop at 1645

Does Liz get to the bus stop in time to get this bus?
You must show all your working.

105 mins = 60 mins + 45 mins = 1 hr 45 mins

1 hr 45 mins + 20 mins = 2 hrs 5 mins

Film — walk to bus stop

2 hrs 5 mins after 1430 = 1635

Yes Liz gets to the bus stop in time

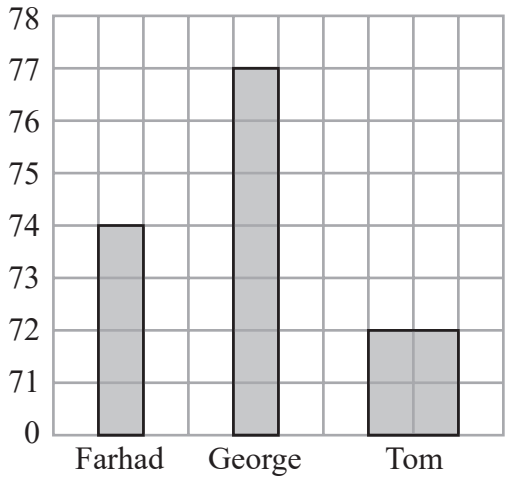
(Total for Question 6 is 3 marks)

7 Farhad, George and Tom each did a test.

Here are their marks for the test.

Farhad	74
George	77
Tom	72

George drew this bar chart to show the marks they got.
The bar chart is **not** fully correct.



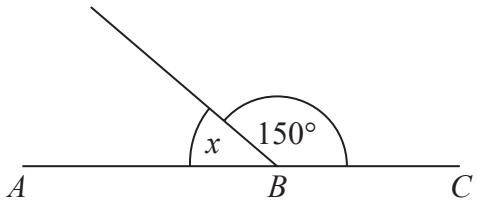
Write down **two** things that are wrong with George's bar chart.

1 Tom's bar is thicker than the other bars.

2 The graph's y-axis starts at 0, then has an increment of 71, then increases in increments of 1.

(Total for Question 7 is 2 marks)

8



ABC is a straight line.

(a) (i) Work out the size of the angle marked *x*.

$x + 150 = 180$

$x = 180 - 150 = 30°$

30 °

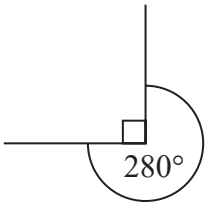
(1)

(ii) Give a reason for your answer.

Angles on a straight line add up to 180°

(1)

The diagram below is wrong.



(b) Explain why.

The sum of angles around a point is 360°. One of the angles is 90°, so the remaining reflex angle is 270° not 280°.

(1)

(Total for Question 8 is 3 marks)

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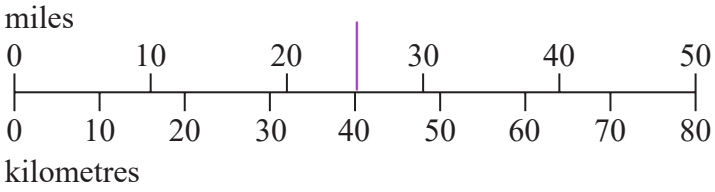
9 This scale can be used to change between kilometres and miles.



(a) Use the scale to change 40 kilometres to miles.

Mark a straight vertical line at 40 km.

The line is midway between 20 & 30 miles, at 25 miles.

25 miles

(1)

Here is an approximate rule to change from kilometres to miles.

Divide the distance in kilometres by 10 and then multiply by 6

(b) Use this approximate rule to change 40 kilometres to miles.

① 40 ÷ 10 = 4

② 4 × 6 = 24 miles

24 miles

(2)

(c) Compare your answer to part (b) with your answer to part (a).

The two values are very similar. The approximation is a good one.

(1)

(Total for Question 9 is 4 marks)

10 (a) Solve $3m = 36$

$3m = 36$

$\div 3$ ($3 \times m = 36$) $\div 3$

$m = 12$

$m =$ 12

(1)

(b) Solve $7 - x = 3$

$7 - x = 3$

$+x$ ( ) $+x$

$7 = 3 + x$

-3 ( ) -3

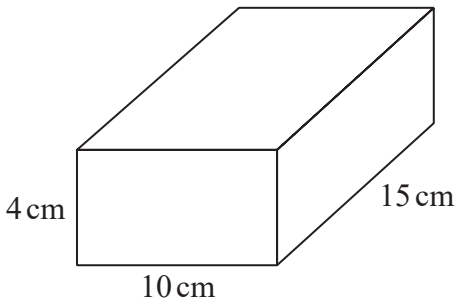
$4 = x$

$x =$ 4

(1)

(Total for Question 10 is 2 marks)

11 Here is a cuboid.



Work out the volume of the cuboid.

Volume = Width × Height × Length

Volume = 10 × 4 × 15

Volume = 600

We also need to multiply the units (cm) together:

cm × cm × cm = cm^3

600 cm^3

(Total for Question 11 is 3 marks)

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12 Lucy uses a code to open a lock.

The code is a letter followed by a 2-digit number.

The letter is L or U.
The number is a prime number between 20 and 30

Write down all the possibilities for Lucy's code.

List out all possibilities:

Letter	Prime No.
L	23
U	23
L	29
U	29

A Prime number is a number that is divisible by 1 or itself only.

(Total for Question 12 is 2 marks)

13 A machine fills bags with sweets.

There are 4275 sweets.
There are 28 sweets in each full bag.

The machine fills as many bags as possible.

How many sweets are left?

Bus stop division:

$$28 \overline{)4\,^{14}2\,^{7}7\,^{}5} = 0152 \text{ r } 19$$

19 sweets are left

19

(Total for Question 13 is 3 marks)

14 The table gives information about the number of goals scored by each of three teams.

Team	Number of goals
City	50
Rovers	45
United	25

Draw an accurate pie chart for this information.

Total = 50 + 45 + 25 = 120

$\frac{50}{120} = \frac{5}{12}$

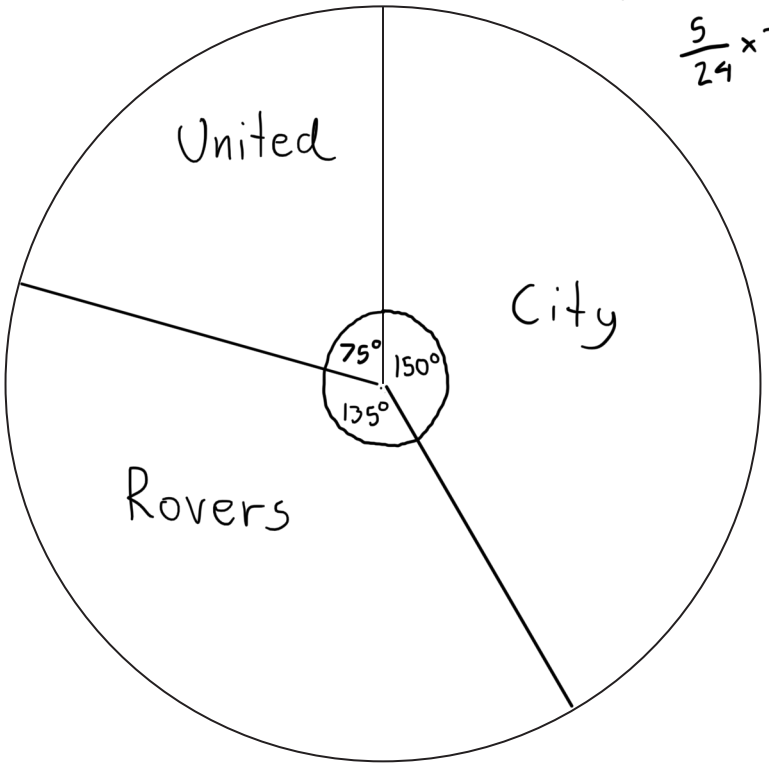
$\frac{45}{120} = \frac{3}{8}$

$\frac{25}{120} = \frac{5}{24}$

$\frac{5}{12} \times 360° = 150°$

$\frac{3}{8} \times 360° = 135°$

$\frac{5}{24} \times 360° = 75°$



(Total for Question 14 is 3 marks)

15 $T = 3x + 4y$

(a) Work out the value of T when $x = 5$ and $y = -7$

Substitute $x = 5$ & $y = -7$ into equation

$T = 3x + 4y$

$T = 3(5) + 4(-7)$

$T = 15 - 28$

$T = -13$

$T = -13$

(2)

(b) Work out the value of y when $T = 38$ and $x = 6$

① Rearrange for y

$T = 3x + 4y$

$T - 3x = 4y$

$\frac{T - 3x}{4} = y$

② Substitute values in.

$\frac{38 - 3(6)}{4} = 5$

$y = 5$

(2)

(Total for Question 15 is 4 marks)

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16 An exam has two papers, Paper 1 and Paper 2

Paper 1 has 60 marks.
Paper 2 has 90 marks.

The pass mark is $\frac{2}{3}$ of the total number of marks.

Danielle gets 70% of the marks for Paper 1

How many of the marks for Paper 2 must Danielle get in order to get the pass mark?

Total number of marks = 60 + 90 = 150

$\frac{2}{3}$ of total marks: $\frac{2}{3} \times 150 = 100$

70% of marks For paper 1: $0.7 \times 60 = 42$

Marks needed For paper 2: $100 - 42 = 58$

58

(Total for Question 16 is 4 marks)

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17 Scott wants to make orange juice.
He is going to buy boxes of oranges.

There are 24 oranges in each box of oranges.
30 oranges make 2 litres of orange juice.

Scott needs to buy enough oranges to make 8 litres of orange juice.

(a) Work out the number of boxes of oranges that Scott needs to buy.
You must show all your working.

Oranges	Litres
30	2
120	8

(×4 to get No. of litres we want)

(×4 (No. of oranges needed))

Oranges	Boxes
24	1
120	5

(×5)

5 boxes

(3)

Scott also buys
1260 apples
280 bananas

(b) Write down the ratio of the number of apples that Scott buys to the number of bananas that he buys.
Give your ratio in its simplest form.

Apples	Bananas
1260	280
126	28
63	14
9	2

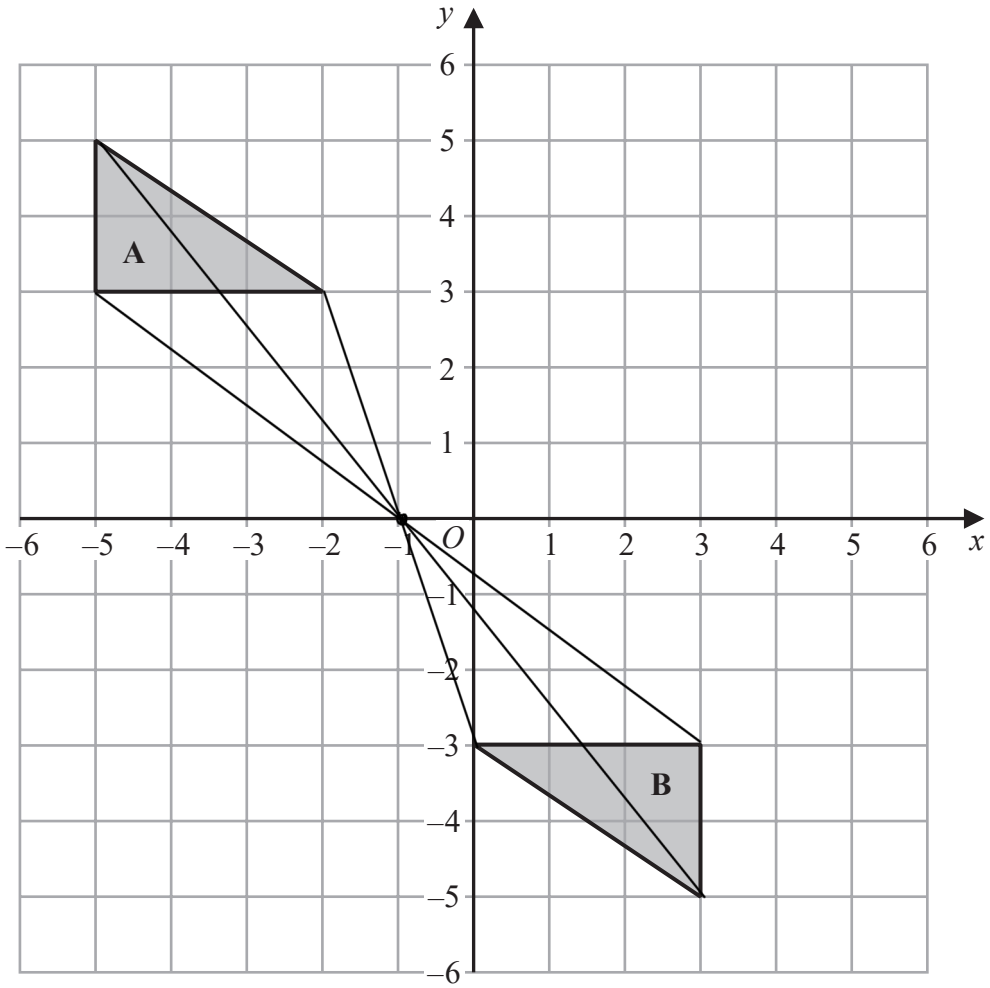
(÷10, ÷2, ÷7)

9 : 2

(2)

(Total for Question 17 is 5 marks)

18



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

A 180° rotation around the point (-1, 0).

(Total for Question 18 is 2 marks)

19 Adam, Linda and Rytis share an amount of money.

Linda gets three times as much money as Rytis gets.
Linda gets half as much money as Adam gets.

What fraction of the amount of money does Linda get?

Rytis gets r amount.

Linda gets 3r.

Linda gets half as much as Adam. Linda gets 3r so Adam gets 6r.

Total amount: $r + 3r + 6r = 10r$

Percentage (Linda): $\frac{3r}{10r} = \frac{3}{10}$

$\frac{3}{10}$

(Total for Question 19 is 2 marks)

20 Pens and pencils are sold in a shop.

12 pencils cost £1.80

The ratio of the cost of a pen to the cost of a pencil is 7 : 3

Work out the cost of 5 pens.

pens : pencils
7 : 3
×0.05 ↓ 0.35 : 0.15 ↓ ×0.05

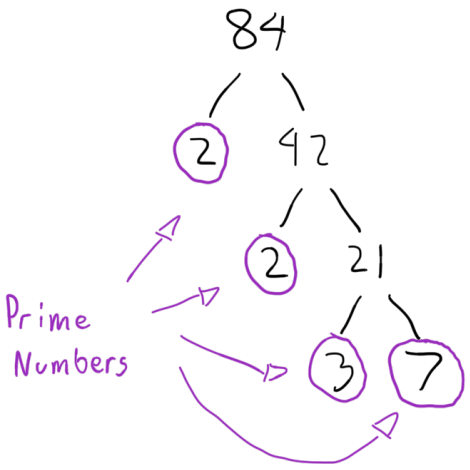
pencils : cost
12 : £1.80 ÷12
÷12 ↓ 1 : £0.15 ÷12

pen : price of pen
1 : 0.35
×5 ↓ 5 : 1.75 ↓ ×5

£ 1.75

(Total for Question 20 is 4 marks)

21 (a) Write 84 as a product of its prime factors.



$2 \times 2 \times 3 \times 7 = 84$

(2)

(b) Find the lowest common multiple (LCM) of 60 and 84

$60 \times 84 = 5,040$

$5040 \div 4 = 1260$

$1260 \div 3 = 420$

$420 = 60 \times 7$

$420 = 84 \times 5$

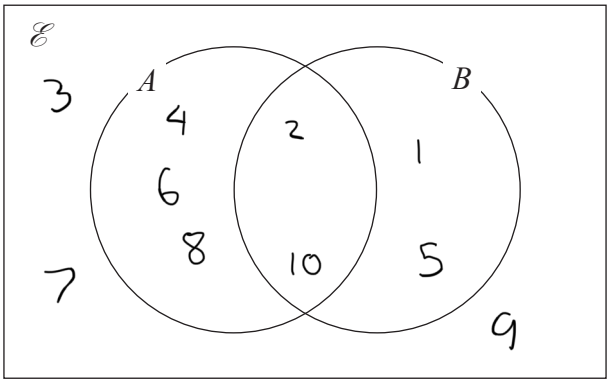
420

(2)

(Total for Question 21 is 4 marks)

22 $\mathscr{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
A = {even numbers}
B = {factors of 10}

(a) Complete the Venn diagram for this information.



(3)

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

(b) Find the probability that this number is in the set $A \cap B$

$P(A \cap B) = \frac{2}{10}$ ← numbers in the middle
← Total no. of numbers
$= 0.2$

0.2

(2)

(Total for Question 22 is 5 marks)

23 Carlo puts tins into small boxes and into large boxes.

He puts 6 tins into each small box.
He puts 20 tins into each large box.

Carlo puts a total of 3000 tins into the boxes so that

number of tins in small boxes : number of tins in large boxes = 2 : 3

Carlo says that less than 30% of the boxes filled with tins are large boxes.

Is Carlo correct?
You must show all your working.

Small : Large
2 : 3 $\quad 2+3=5$ parts

$3000 \div 5 = 600 \rightarrow 600 = 1$ part

So the ratio is actually

$2 \times 600 = 1200$ $\quad 3 \times 600 = 1800$

$1200 \div 6 = 200$ $\quad 1800 \div 20 = 90$

$$\frac{90}{200+90} = \frac{90}{290} = \frac{9}{29} = 0.31 = 31\%$$

No Carlo is not correct as the large boxes make up 31% of the total boxes.

(Total for Question 23 is 5 marks)

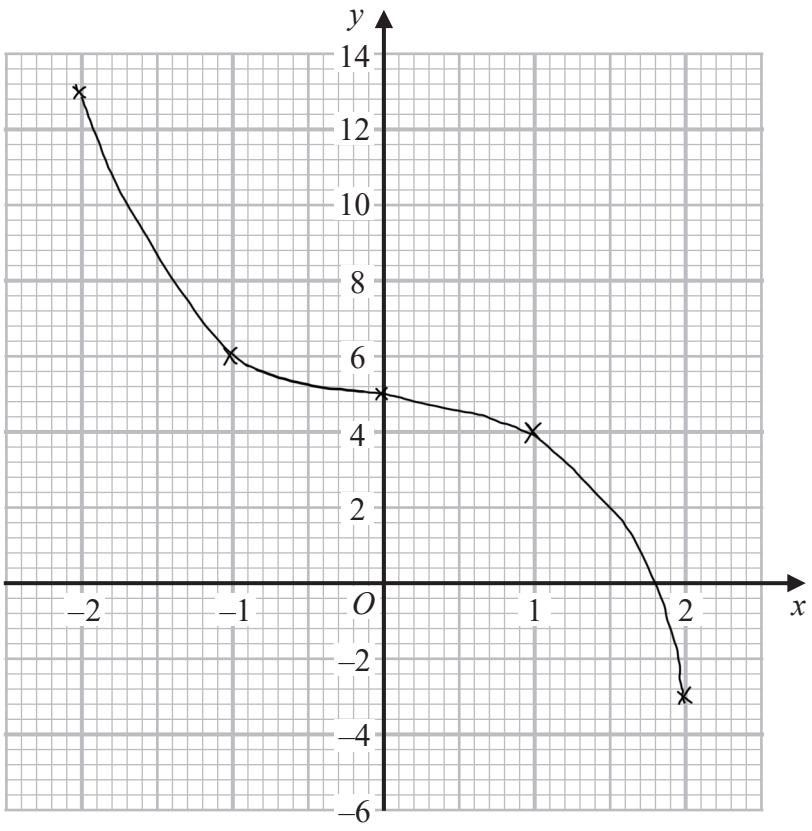
24 (a) Complete the table of values for $y = 5 - x^3$

$5-(-2)^3 = 5--8 = 13$
$5-(0)^3 = 5$
$5-(1)^3 = 5-1 = 4$
$5-(2)^3 = 5-8 = -3$

x	–2	–1	0	1	2
y	13	6	5	4	-3

(2)

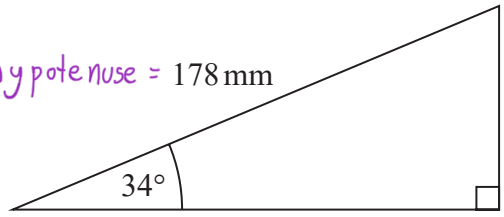
(b) On the grid below, draw the graph of $y = 5 - x^3$ for values of x from –2 to 2



(2)

(Total for Question 24 is 4 marks)

25



Work out the value of x.
Give your answer correct to 1 decimal place.

$\sin\theta = \frac{opp}{hyp}$

$\sin 34 = \frac{x}{178}$

$178 \sin 34 = x = 99.536\text{mm}$

To 1 decimal place → 99.5 mm

$x = 99.5$ mm

(Total for Question 25 is 2 marks)

26 $\mathbf{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$

Find $2\mathbf{a} - 3\mathbf{b}$ as a column vector.

① multiply both parts of vector by 2.

$2a = 2 \times a = 2 \times \begin{pmatrix} 3 \\ 4 \end{pmatrix} = \begin{pmatrix} 6 \\ 8 \end{pmatrix}$

② multiply both parts of vector by 3.

$3b = 3 \times b = 3 \times \begin{pmatrix} 5 \\ -2 \end{pmatrix} = \begin{pmatrix} 15 \\ -6 \end{pmatrix}$

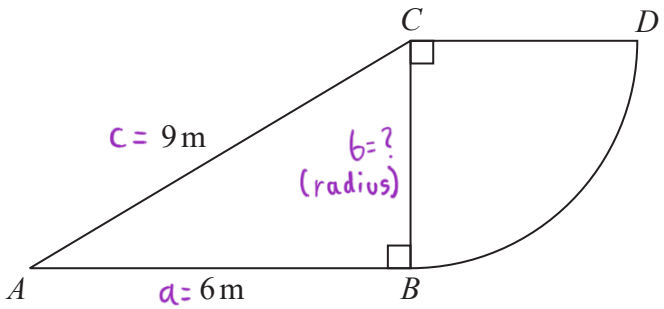
③ Add the top and bottom parts of the vectors.

$2a - 3b = \begin{pmatrix} 6 \\ 8 \end{pmatrix} - \begin{pmatrix} 15 \\ -6 \end{pmatrix} = \begin{pmatrix} -9 \\ 14 \end{pmatrix}$

$\begin{pmatrix} -9 \\ 14 \end{pmatrix}$

(Total for Question 26 is 2 marks)

27 The diagram shows a right-angled triangle and a quarter circle.



The right-angled triangle ABC has angle $ABC = 90°$
The quarter circle has centre C and radius CB.

Work out the area of the quarter circle.
Give your answer correct to 3 significant figures.
You must show all your working.

Pythagoras: $a^2 + b^2 = c^2$

$b^2 = c^2 - a^2$

$b = \sqrt{c^2 - a^2} = \sqrt{9^2 - 6^2} = 3\sqrt{5}$ = radius

Area of whole circle: Area $= \pi r^2$

Area $= \pi \times (3\sqrt{5})^2 = 45\pi$

Area of quarter circle: $45\pi \div 4 = 35.3\ m^2$

35.3 ..... m^2

(Total for Question 27 is 4 marks)

28 Each exterior angle of a regular polygon is 15°

Work out the number of sides of the polygon.

Exterior angle × No. of sides = 360°

$15° \times n = 360°$

$n = \frac{360°}{15°} = 24$

24 sides

(Total for Question 28 is 2 marks)

29 Write down the gradient of the line with equation $y = 2x + 3$

$y = mx + c$

m: gradient

c: y-intercept

$y = 2x + 3$

(Compare equations)

gradient = 2

(Total for Question 29 is 1 mark)

TOTAL FOR PAPER IS 80 MARKS

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