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 | | | | |

Tuesday 6 November 2018

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

Mathematics

Paper 1 (Non-Calculator)
Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
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 not 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.

Turn over ▶

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6/7/7/7/7/7/1/

P 5 5 5 8 3 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 the following numbers in order of size.
Start with the smallest number.

4 0 3 1 2
0.4 0.02 0.37 0.152 0.2

0.02 , 0.152 , 0.2 , 0.37 , 0.4 ✓

(Total for Question 1 is 1 mark)

2 Write 0.6 as a percentage.

Decimal $\xrightarrow{\times 100}$ Percentage

0.6×100
$= 60\%$

60 ✓ %

(Total for Question 2 is 1 mark)

3 Here is a list of numbers.

(10 ÷) 3 5 7 12 15 18 20
$\frac{10}{3}$ 2 $\frac{10}{7}$ $\frac{10}{12}$ $\frac{10}{15}$ $\frac{10}{18}$ $\frac{10}{20}$

From the list, write down a factor of 10

A factor is a number which will divide exactly into another number

5 ✓

(Total for Question 3 is 1 mark)

4 Write 7829 to the nearest 1000

7829
↓ 8 > 5 → Round up
8000

8000 ✓

(Total for Question 4 is 1 mark)

5 (a) Work out $3 \times 5 + 7$

$3 \times 5 = 15$
$15 + 7 = 22$

22 ✓

(1)

(b) Work out 2^3

$2^3 = 2 \times 2 \times 2$
$= 4 \times 2$
$= 8$

8 ✓

(1)

(c) Write brackets ( ) in this statement to make it correct.

$7 \times (2 + 3) = 35$ ✓

(1)

(Total for Question 5 is 3 marks)

6 Sue has 2 cats.

Each cat eats $\frac{1}{4}$ of a tin of cat food each day.

Sue buys 8 tins of cat food.

Has Sue bought enough cat food to feed her 2 cats for 14 days?
You must show how you get your answer.

$\frac{1}{4} \times 2 = \frac{2}{4} = \frac{1}{4}$ ✓

2 cats will eat $\frac{1}{2}$ a tin each day

$\frac{1}{2} \times 14 = 7$ ✓

Sue needs 7 tins to feed her cats for 14 days

Yes, Sue has bought enough tins because she needs 7 tins to feed her cats for 14 days, however she has bought 8 tins ✓

(Total for Question 6 is 3 marks)

7 There are only apple trees, cherry trees, pear trees and plum trees in an orchard.

The pictogram shows information about the numbers of apple trees, cherry trees and pear trees in the orchard.

Apple	4 4 4 = 12
Cherry	4 1 = 5
Pear	4 2 = 6
Plum	☐ ☐ ✓

Key:

☐ represents 4 trees

There is a total of 30 trees in the orchard.

Complete the pictogram.

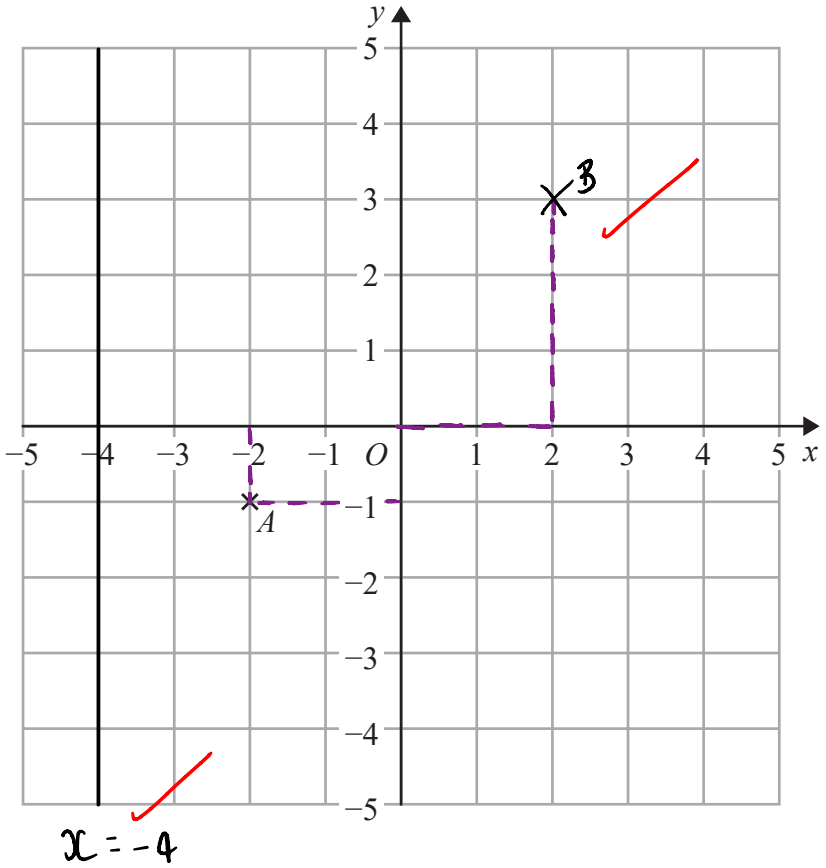
12 + 5 + 6 = 23 ✓

30 - 23 = 7 ✓

Number of plum trees is 7

(Total for Question 7 is 3 marks)

8



(a) Write down the coordinates of point A.

x y

(−2 , −1)

(1)

(b) On the grid, mark with a cross (×) the point (2, 3)
Label this point B.

(1)

(c) On the grid, draw the line with equation $x = -4$

(1)

(Total for Question 8 is 3 marks)

9 $g = 9$
$h = 4$

Work out the value of $2g + 3h$

$2g + 3h$
$= 2(9) + 3(4)$ ✓
$= 18 + 12$
$= 30$

30 ✓

(Total for Question 9 is 2 marks)

10 Write down two prime numbers that have a sum of 32

Prime number → A number which is only divisible by itself and one

2 17
3 19
5 23
7 29
11 31
13

$3 + 29 = 32$
$13 + 19 = 32$

(Either)
3 and 29
or 13 and 19 ✓✓

(Total for Question 10 is 2 marks)

11 Here are some fractions.

$$\frac{9}{12} = \frac{3}{4} \quad \frac{6}{8} = \frac{3}{4} \quad \frac{18}{24} = \frac{3}{4} \quad \frac{10}{16} = \frac{5}{8} \quad \frac{15}{20} = \frac{3}{4}$$

One of these fractions is **not** equivalent to $\frac{3}{4}$

(a) Which fraction?

$\frac{10}{16}$ ✓

(1)

(b) Work out $\frac{1}{12} + \frac{5}{6}$

$\frac{5}{6} = \frac{10}{12}$

$\frac{1}{12} + \frac{10}{12} = \frac{11}{12}$ ✓

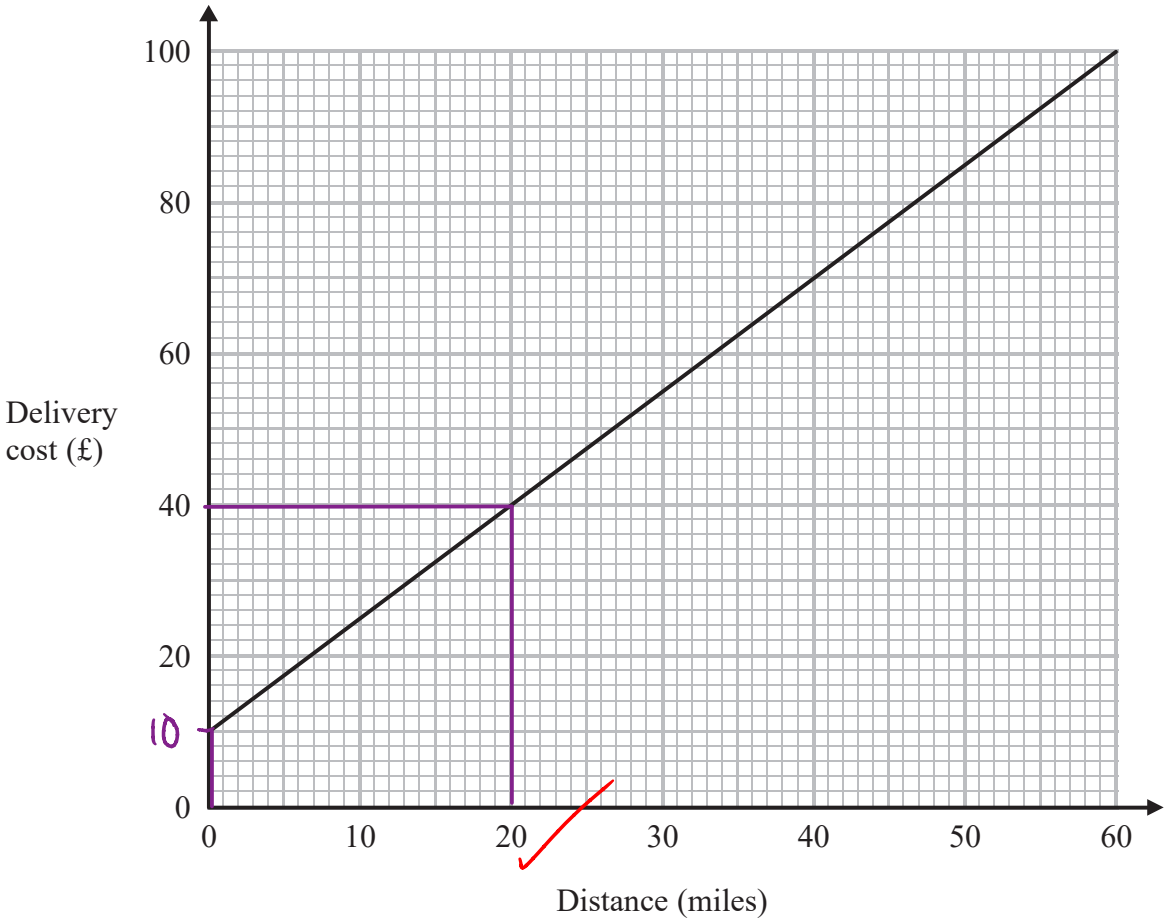
$\frac{11}{12}$ ✓

(2)

(Total for Question 11 is 3 marks)

Tom uses his lorry to deliver bricks.

You can use this graph to find the delivery cost for different distances.



For each delivery, there is a fixed charge plus a charge for the distance.

(a) How much is the fixed charge?

£ 10

(1)

Tom makes two deliveries of bricks.
The distance of one delivery is 20 miles more than the distance of the other delivery.

(b) Work out the difference between the two delivery costs.

20 miles costs £40

0 miles costs £10

40 − 10 = 30

£ 30

(2)

(Total for Question 12 is 3 marks)

13 Azmol, Ryan and Kim each played a game.

Azmol's score was four times Ryan's score.
Kim's score was half of Azmol's score.

Write down the ratio of Azmol's score to Ryan's score to Kim's score.

Azmol : Ryan : Kim

Let x be Ryan's score

$R = x$
$A = 4x$
$K = \frac{1}{2}A$

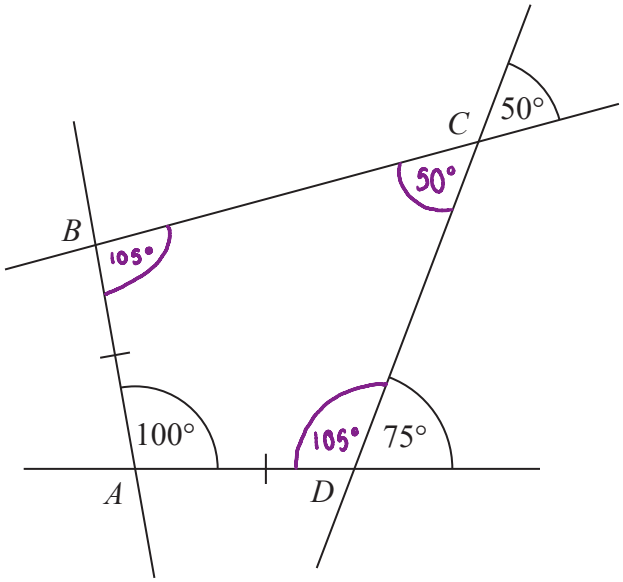
$K = \frac{1}{2}(4x)$
$= 2x$ ✓

$4x : x : 2x$
$(\div x)$
$4 : 1 : 2$

4 : 1 : 2 ✓

(Total for Question 13 is 2 marks)

14 The diagram shows quadrilateral $ABCD$ with each of its sides extended.



$AB = AD$

Show that $ABCD$ is a kite.
Give a reason for each stage of your working.

$\angle BCD = 50°$ ✓
Because vertically opposite angles are equal

$\angle ADC = 180 - 75$
$= 105°$ ✓
Because angles on a straight line add to 180°

$\angle ABC + 100 + 105 + 50 = 360$
$\angle ABC = 105°$ ✓
Because angles in a quadrilateral add to 360°

$\therefore$ ABCD is a kite because it has two equal side lengths and two equal angles ✓

(Total for Question 14 is 4 marks)

15 Shahid is going to use these instructions to make a fizzy drink.

Mix 5 parts of orange juice with 2 parts of lemonade

Shahid thinks that he has 300 m*l* of orange juice and 200 m*l* of lemonade.

(a) If Shahid is correct, what is the greatest amount of fizzy drink he can make?

$\frac{300}{5}$ = 60ml per part of orange juice ✓

$\frac{200}{2}$ = 100ml per part of lemonade

1 part = 60ml

5 parts = 60 × 5 = 300ml

2 parts = 60 × 2 = 120ml ✓

300 + 120 = 420ml

420 ✓ ml

(3)

Shahid has 300 m*l* of orange juice but he only has 160 m*l* of lemonade.

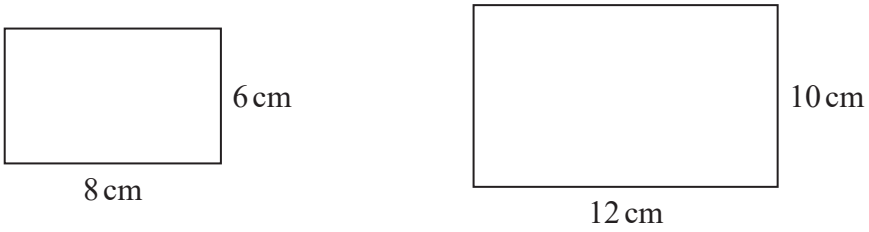
(b) Does this affect the greatest amount of fizzy drink he can make?
Give a reason for your answer.

No, because only 120ml of lemonade is required to make 420ml of the fizzy drink ✓

(1)

(Total for Question 15 is 4 marks)

16 Here are two rectangles.



Jim says,

"The two rectangles are similar because $8 + 4 = 12$ and $6 + 4 = 10$"

Is Jim correct?
Explain your answer.

No, because he has added a number to the side lengths, rather than multiplied

(Total for Question 16 is 1 mark)

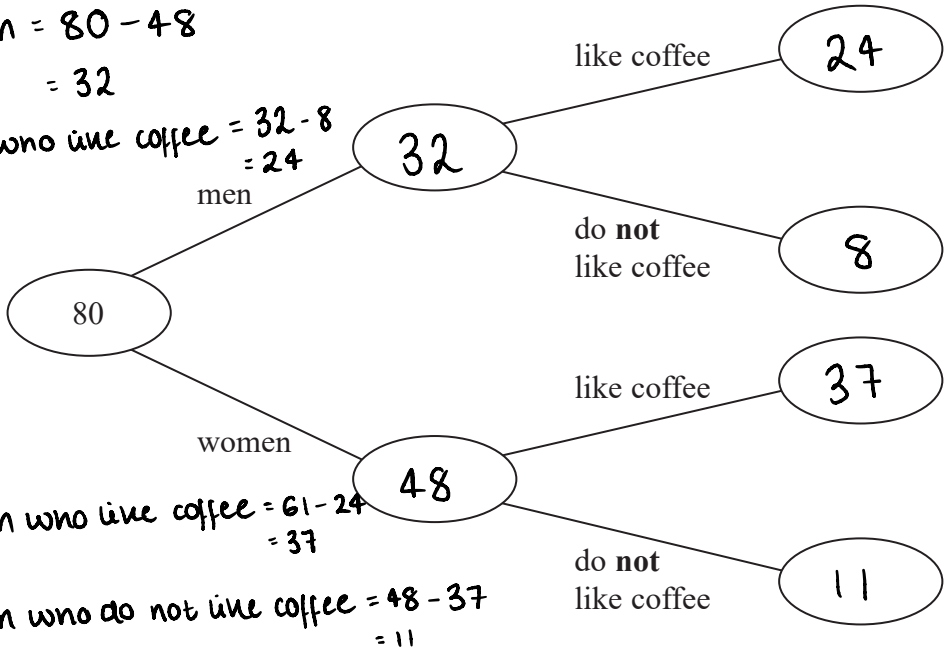
17 80 people are asked if they like coffee.

48 of these people are women.
61 of the 80 people like coffee.
8 of the men do **not** like coffee.

(a) Use this information to complete the frequency tree.

N° of men = 80 − 48
= 32

N° of men who like coffee = 32 − 8
= 24



N° of women who like coffee = 61 − 24
= 37

N° of women who do not like coffee = 48 − 37
= 11

✓✓✓

(3)

One of the people who like coffee is chosen at random.

(b) Find the probability that this person is a woman.

$P = \frac{\text{n° of women who like coffee}}{\text{n° of people who like coffee}} = \frac{37}{61}$

✓ ✓

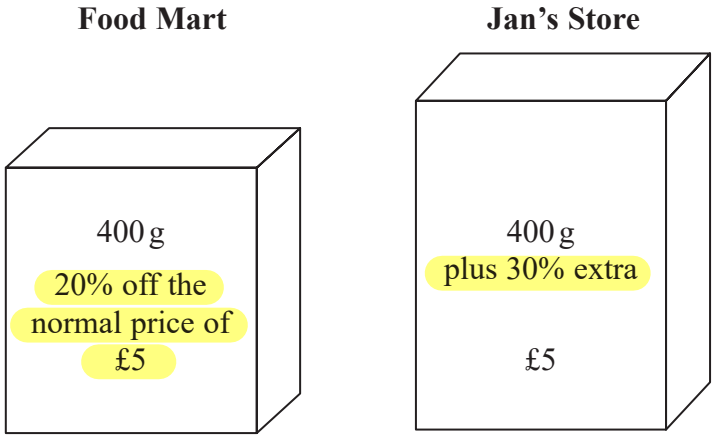
$\frac{37}{61}$

(2)

(Total for Question 17 is 5 marks)

18 Food Mart and Jan's Store sell boxes of the same type of breakfast cereal.

Each shop has a special offer.



Which box of cereal is the better value for money?
You must show your working.

£5 → 100%
÷5 ÷5
£1 → 20%

5 - 1 = £4 ✓

400g → 100%
÷10 ÷10
40g → 10%
×3 ×3
120g → 30%

400 + 120 = 520g ✓

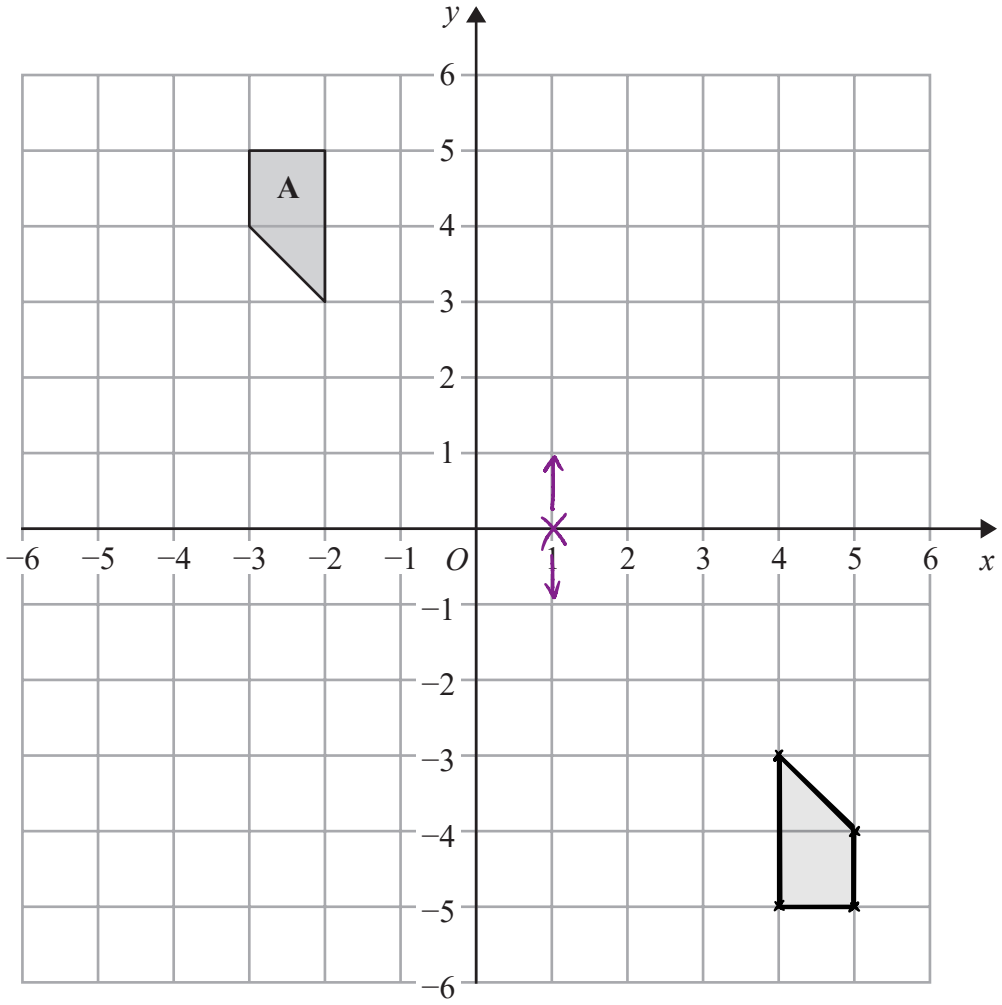
Food Mart
400g costs £4
(÷4) (÷4)
100g costs £1

Jan's Store
520g costs £5
(÷5) (÷5)
104g costs £1 ✓

Jan's store because 104g costs £1 ✓

(Total for Question 18 is 4 marks)

19



Rotate shape **A** 180° about (1, 0)

x y

(Total for Question 19 is 2 marks)

20 Work out the value of $\dfrac{3^7 \times 3^{-2}}{3^3}$

$\dfrac{3^7 \times 3^{-2}}{3^3}$

$= \dfrac{3^{7-2}}{3^3}$ ✓

$= \dfrac{3^5}{3^3}$

$= 3^{5-3}$

$= 3^2$

$= 9$

$a^x \times a^y = a^{x+y}$

$\dfrac{a^x}{a^y} = a^{x-y}$

9 ✓

(Total for Question 20 is 2 marks)

21 $v^2 = u^2 + 2as$

$u = 12 \quad a = -3 \quad s = 18$

(a) Work out a value of v.

$v^2 = (12)^2 + 2(-3)(18)$ ✓

$v^2 = 144 + 2(-54)$

$v^2 = 144 - 108$

$v^2 = 36$

$\sqrt{\quad} \quad \sqrt{\quad}$

$v = \pm 6$

± 6 ✓

(2)

(b) Make s the subject of $v^2 = u^2 + 2as$

$v^2 = u^2 + 2as$

$(-u^2) \quad (-u^2)$ ✓

$v^2 - u^2 = 2as$

$(\div 2a) \quad (\div 2a)$

$\dfrac{v^2 - u^2}{2a} = s$

$s = \dfrac{v^2 - u^2}{2a}$ ✓

(2)

(Total for Question 21 is 4 marks)

22 A bonus of £2100 is shared by 10 people who work for a company.
40% of the bonus is shared equally between 3 managers.
The rest of the bonus is shared equally between 7 salesmen.

One of the salesmen says,

"If the bonus is shared equally between all 10 people I will get 25% more money."

Is the salesman correct?
You must show how you get your answer.

100% - 40% = 60%

50% + 10% = 60% ✓

1050 + 210 = 1260 ✓

1260 ÷ 7 = 180 ✓

$$7\overline{)1260} = 180$$

Amount per salesman is £180

2100 ÷ 10 = 210 ✓

125% = 100% + 25%

= 180 + 45

= £225

No, because when split evenly, each salesman gets £210, but 25% extra from £180 is £225 ✓

(Total for Question 22 is 5 marks)

23 It would take 120 minutes to fill a swimming pool using water from 5 taps.

(a) How many minutes will it take to fill the pool if only 3 of the taps are used?

120 × 5 = 600 minutes
1 tap takes 600 minutes
600 ÷ 3 = 200 minutes ✓

200 ✓ minutes

(2)

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

Each tap fills up pool at the same rate ✓

(1)

(Total for Question 23 is 3 marks)

24 A plane travels at a speed of 213 miles per hour.

(a) Work out an estimate for the number of seconds the plane takes to travel 1 mile.

213 → 200

200 miles per 1 hour
200 miles per 60 minutes
200 miles per 3600 seconds ✓
↓ ÷200 ↓ ÷200
1 mile per 18 seconds ✓

18 ✓ seconds

(3)

(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

Overestimate, because we rounded the speed down ✓

(1)

(Total for Question 24 is 4 marks)

25 Solve the simultaneous equations

① $5x + y = 21$
② $x - 3y = 9$

① × 3

$5x + y = 21$

↓ × 3 ↓ × 3

③ $15x + 3y = 63$

② + ③

$x - 3y = 9$
$15x + 3y = 63$ +
$16x = 72$

↓ ÷ 8 ↓ ÷ 8

$2x = 9$

↓ ÷ 2 ↓ ÷ 2

$x = 4.5$

$x - 3y = 9$

When $x = 4.5$

$4.5 - 3y = 9$

+ 3y + 3y

$4.5 = 9 + 3y$

− 9 − 9

$-4.5 = 3y$

÷ 3 ÷ 3

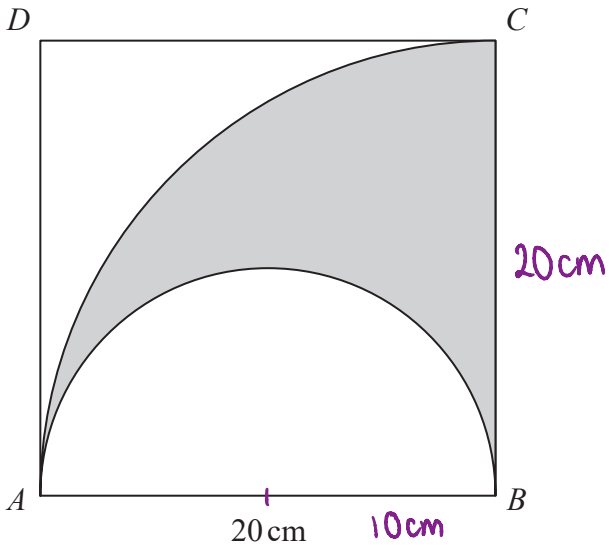
$-1.5 = y$

$x =$ 4.5

$y =$ −1.5

(Total for Question 25 is 3 marks)

26 The diagram shows a square $ABCD$ with sides of length 20 cm.
It also shows a semicircle and an arc of a circle.



AB is the diameter of the semicircle.
AC is an arc of a circle with centre B.

Show that $\dfrac{\text{area of shaded region}}{\text{area of square}} = \dfrac{\pi}{8}$

Area of circle $= \pi r^2$

Area of ACB $= \dfrac{\pi (20)^2}{4}$

$= \dfrac{\pi \times 400}{4}$

$= 100\pi$ ✓

Area of semi-circle $= \dfrac{\pi (10)^2}{2}$

$= \dfrac{\pi \times 100}{2}$

$= 50\pi$ ✓

$100\pi - 50\pi = 50\pi$

Area of square $= b \times h$

$= 20 \times 20$

$= 400$ ✓

$\dfrac{\text{Area of shaded region}}{\text{Area of square}} = \dfrac{50\pi}{400}$

$= \dfrac{5\pi}{40}$

$= \dfrac{\pi}{8}$ ✓

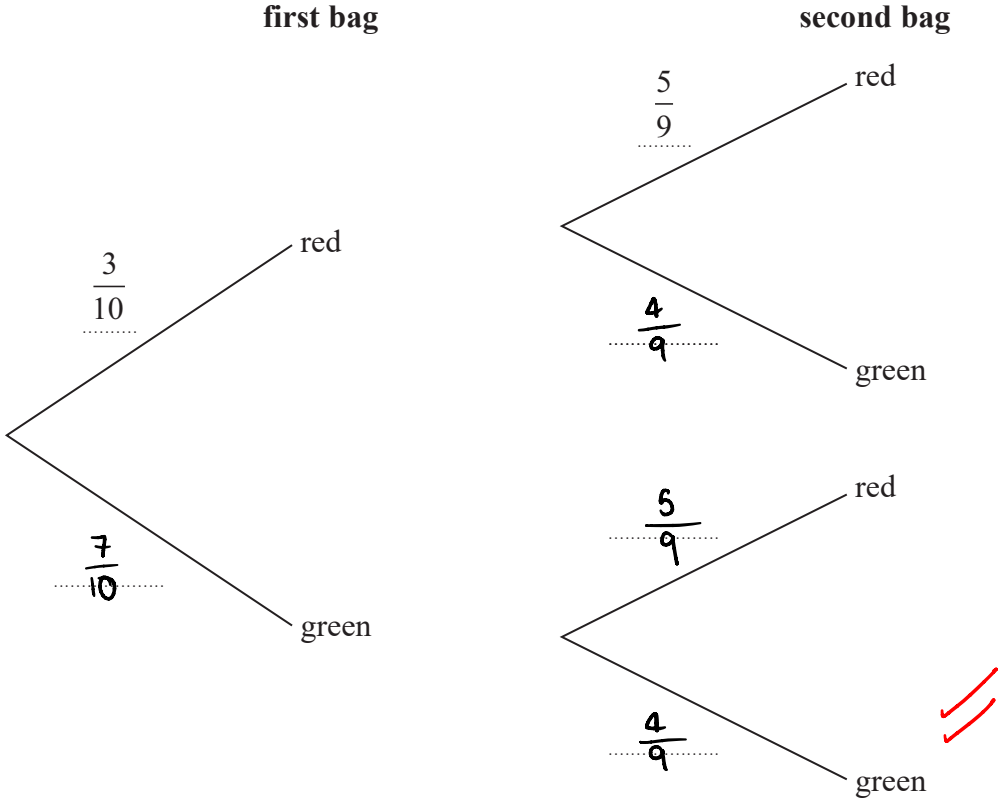
(Total for Question 26 is 4 marks)

27 Amina has two bags.

In the first bag there are 3 red balls and 7 green balls. = 10 balls
In the second bag there are 5 red balls and 4 green balls. = 9 balls

Amina takes at random a ball from the first bag.
She then takes at random a ball from the second bag.

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that Amina takes two red balls.

$\frac{3}{10} \times \frac{5}{9}$ ✓

$= \frac{15}{90}$

$\frac{15}{90}$ ✓

(2)

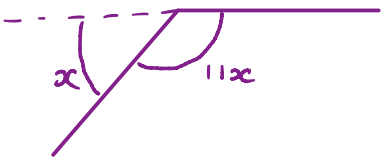
(Total for Question 27 is 4 marks)

28 The size of each interior angle of a regular polygon is 11 times the size of each exterior angle.

Work out how many sides the polygon has.

Let x be the exterior angle

Interior angle is $11x$



$x + 11x = 180$

$12x = 180$

$(\div 12)$ $(\div 12)$

$x = 15°$

All exterior angles on a regular polygon add to 360°

$\frac{360}{15} = 24$

24 ✓

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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