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GCSE Mathematics Practice Tests: Set 4

MR. LEWIS

Paper 2F (Calculator) Solutions.

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

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.
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  – *there may be more space than you need.*
- **Calculators may be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

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.
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ALWAYS LEARNING PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Simplify $3 \times a \times 5 \times b$

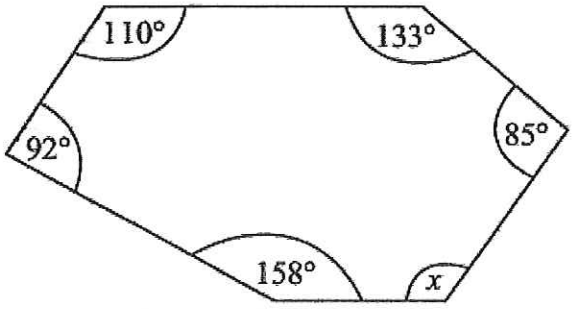
15ab

.....

(Total 1 mark)

---

2. Here is a hexagon.



The angles of a hexagon add up to 720°.

Work out the size of the angle marked x.

158 + 92 + 110 + 133 + 85 = 578

720 − 578 = 142

142

..... °

(Total 2 marks)

---

3. The table shows the names of five of Janette's friends.

Boys	Girls
Dodi James William	Anna Michelle

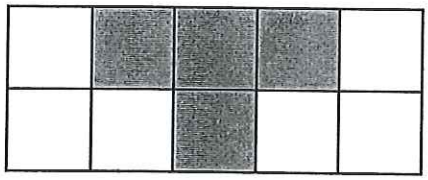
Janette is going to play a team game.
She chooses one of the boys and one of the girls to be in her team.

Write down all the possible combinations Janette can choose.

(D, A) (D, M)
(J, A) (J, M)
(W, A) (W, M)

(Total 2 marks)

4.



(i) What percentage of this shape is shaded?

$\frac{4}{10} =$ 40 %

(ii) Write your answer to part (i) as a decimal.

0.4

(Total 2 marks)

5. Here are some words that can be used to describe the probability that an event will happen.

certain	impossible	likely	unlikely	evens

(a) Write down the word that best describes the probability

(i) that you will win a raffle when 400 tickets are sold and you have 10 of the tickets,

UNLIKELY

(ii) that you get a 10 when you roll an ordinary dice.

IMPOSSIBLE

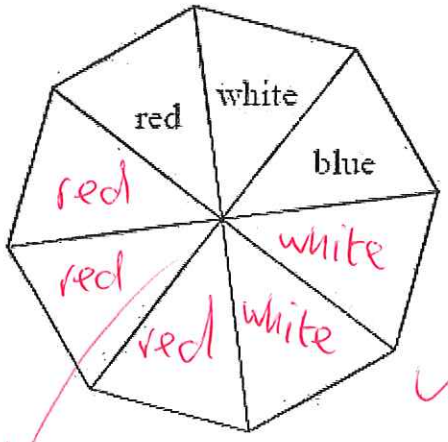
(2)

Ayesha is making a fair 8-sided spinner.
The spinner already has the colours red, white and blue written on it.

The probability that the spinner lands on red will be $\frac{1}{2}$

The probability that the spinner lands on blue will be less than the probability that the spinner lands on white.

(b) Complete the spinner by writing on it the colours that are missing.



(2)

(Total 4 marks)

6. There are 400 counters in a bag.

36% of the counters are yellow.

$\frac{2}{5}$ of the counters are blue.

The rest of the counters are green.

Work out how many counters are green.

Yellow.

36% of 400

$\frac{36}{100} \times 400$

$= 144$ ✓

Blue.

$\frac{2}{5} \times 400$

$= 160$ ✓

Green. ✓

$400 - 144 - 160$

$= 96$

96 ✓

.....

(Total 4 marks)

7. The length of a bus is 10 metres.

Gurjeet makes a model of the bus.
He uses a scale of 1 cm to 40 cm.

Work out the length of the model of the bus.
Give your answer in centimetres.

10 metres $\xrightarrow{\times 100}$ 1000 cm.

$\div 40$

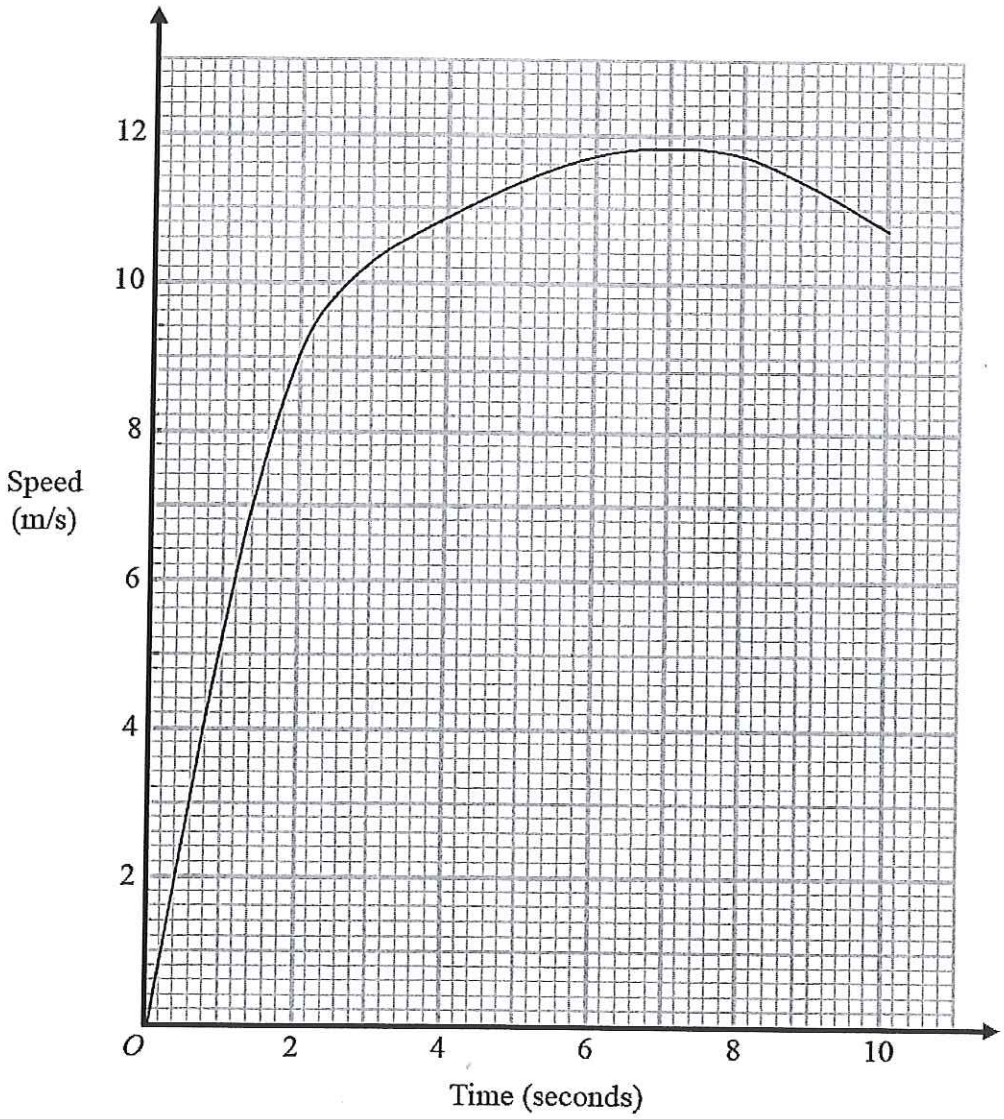
$= 25$ cm

25

..... cm

(Total 2 marks)

3. Usain runs in a race.
The graph shows his speed, in metres per second (m/s), during the first 10 seconds of the race.



(*a*) Write down Usain's speed at 2 seconds.

9 ✓
..... m/s
(1)

(*b*) Write down Usain's greatest speed.

11.8 ✓
..... m/s
(1)

(*c*) Write down the time at which Usain's speed was 7 m/s.

1.4 ✓
..... seconds
(1)

(Total 3 marks)

9. Michael writes down 4 different factors of 60

He adds the 4 factors together.
He gets a number greater than 20 but less than 35

What 4 factors could Michael have written down?

1, 60
2, 30
3, 20
4, 15
5, 12
6, 10.

5 + 6 + 10 + 12 = 33

less than 35, more than 20

5 6 10 12

....

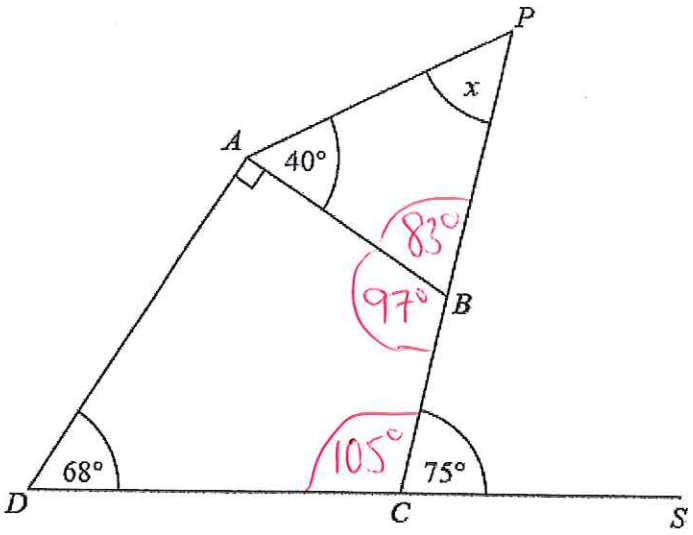
(Total 3 marks)

---

other answers possible

e.g. 10, 12, 5, 2.

10 + 12 + 5 + 2 = 29.



ABCD is a quadrilateral.
DCS and *PBC* are straight lines.

Angle *BAD* = 90°
Angle *ADC* = 68°
Angle *PAB* = 40°
Angle *PCS* = 75°

Work out the size of the angle marked *x*.
Give reasons for your answer.

angle BCD = 105° (angles on a straight line add up to 180°)
75 + 105 = 180°

angle ABC = 97° (angles in a quadrilateral add up to 360°)
68 + 105 + 97 + 90 = 360

angle ABP = 83° (angles on a straight line add up to 180°)

x = 57° (angles in a triangle add up to 180°)
40 + 83 + 57 = 180.

(Total 4 marks)

11. Mr Smith kept a record of the number of absences for each student in his class for one term.
Here are his results.

0 0 0 8 4 5 5 3 2 1

(a) Write down the mode.

↑
MOST.

0

.....

(1)

(b) Work out the mean.

$0+0+0+8+4+5+5+3+2+1$

10

$= \frac{28}{10}$

2.8

.....

(2)

(Total 3 marks)

You can use this rule to work out the total cost, in pounds, of hiring a pressure washer.

Multiply the number of days by 5.4 and then add 15

Ali hires a pressure washer.
The total cost is £52.80

(a) Work out how many days Ali hires the pressure washer for.

$x \times 5.4 + 15 = 52.80$

$-15 \quad -15$

$5.4x = 37.8$

$\div 5.4 \quad \div 5.4$

7

.....days
(2)

Ben hires a pressure washer for y days.
The total cost is £C.

(b) Write down a formula for C in terms of y.

$C = 5.4y + 15$

$C = 5.4y + 15$

.....
(2)

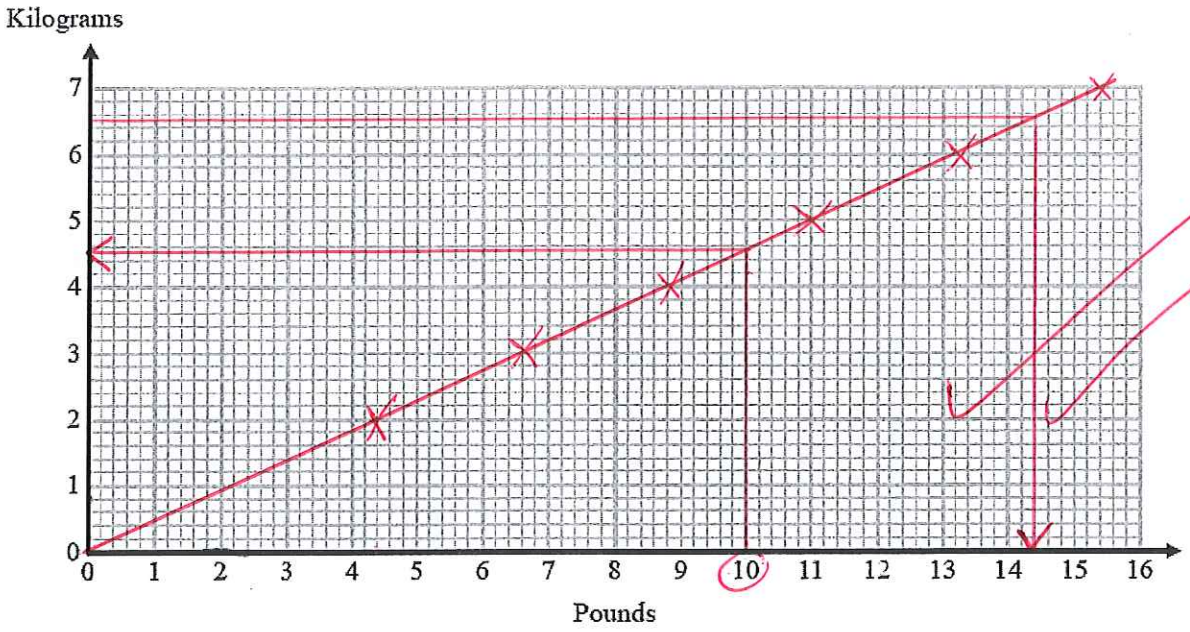
(Total 4 marks)

13. Mary works in a maternity unit.
She weighs the babies.

The table shows some weights in both pounds and kilograms.

pounds	4.4	6.6	8.8	11	13.2	15.4
kilograms	2	3	4	5	6	7

(a) Use this table to draw a conversion graph to change between pounds and kilograms.



(2)

(b) Change 10 pounds to kilograms.

4.5 ..... kilograms

(1)

(c) Change 6.5 kilograms to pounds.

14.4 ..... pounds

(1)

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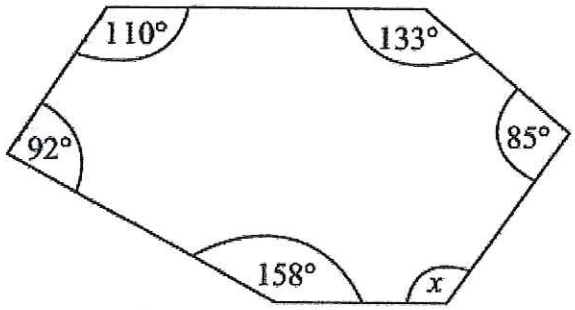

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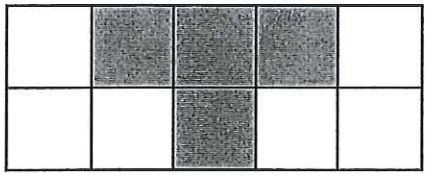

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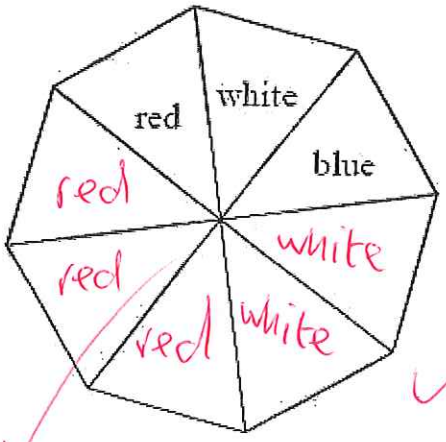

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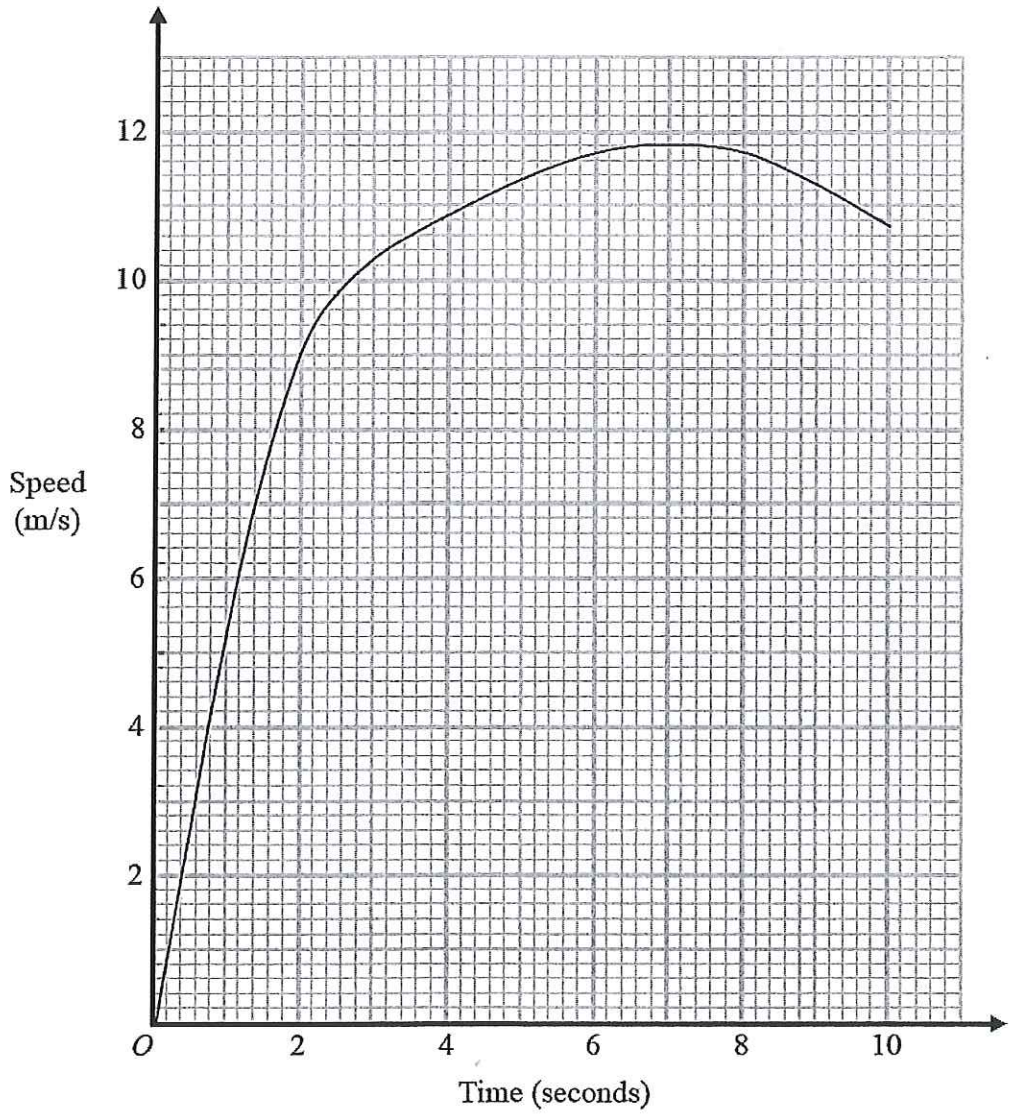

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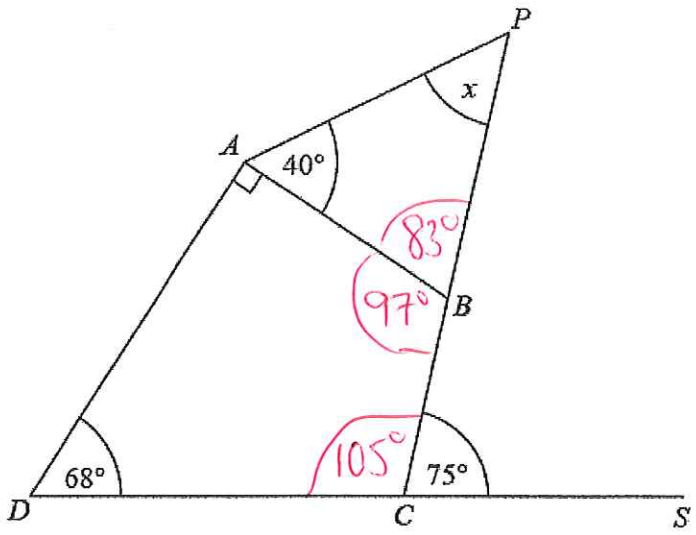

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..... **(1)**

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(Total 3 marks)

12. You can use this rule to work out the total cost, in pounds, of hiring a pressure washer.

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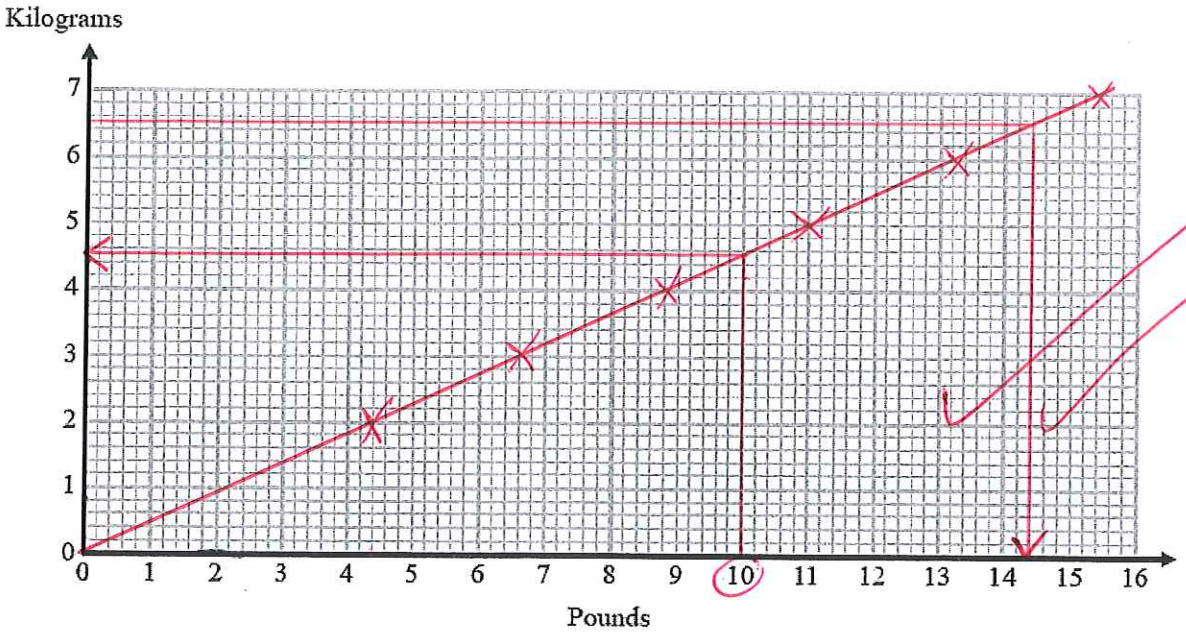


(2)

(b) Change 10 pounds to kilograms.

4.5 ..... kilograms

(1)

(c) Change 6.5 kilograms to pounds.

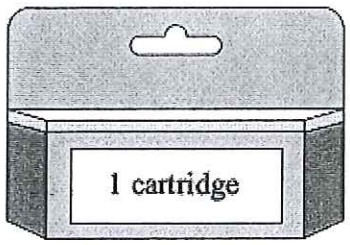
14.4 ..... pounds

(1)

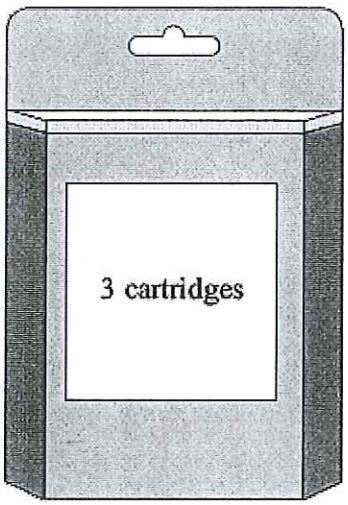
(Total 4 marks)

14. George is going to buy exactly 10 ink cartridges.

Ink Cartridges



£9.39 per cartridge



£24.30 for a pack of 3 cartridges

Find the difference in cost between the cheapest way and the most expensive way to buy the 10 ink cartridges.

9 + 1

3 PACKS of 3 + 1 × 1.

10 × 1

= 10 × £9.39

= £93.90 ✓

3 × £24.30 + £9.39

£72.90 + £9.39

£82.29 ✓

DIFFERENCE IN COST:

£93.90 − £82.29

= £11.61 ✓

UNITS GIVEN (£ OR PENCE)

£11.61 ✓

.....

(Total 5 marks)

15. Henri and Ray buy some flowers for their mother.

They buy

3 bunches of roses for £6.99
1 bunch of roses and 2 bunches of tulips for £4.45

(a) Work out the cost of one bunch of tulips.

3 ROSES = £6.99
1 ROSES = £6.99 ÷ 3 = £2.33

1 ROSES + 2 TULIPS = £4.45
£2.33 + 2 TULIPS = £4.45
2 TULIPS = £2.12
÷2 ÷2

£ 1.06

(3)

Henri and Ray share the total cost of £11.44 in the ratio 5:3

(b) Work out how much Henri pays and how much Ray pays.

5 : 3 = 8 PARTS

£11.44 ÷ 8 = £1.43 each part

Henri : Ray
5 : 3
×£1.43 ×£1.43
£7.15 £4.29

Henri £ 7.15

Ray £ 4.29

(3)

(Total 6 marks)

16. Brian wants to go on holiday.
He is going to take out a loan of £500 to help pay for the holiday.

Brian will have to pay back the £500 plus 20% interest over 12 months.
He will pay back the same amount of money each month.

How much money will he need to pay back each month?

£500 10% = £50
20% = £100
£500 + £100 = £600
600 ÷ 12
= £50

£ 50

(Total 4 marks)

17.

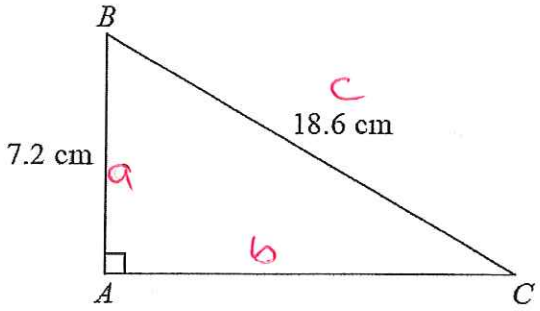


Diagram **NOT** accurately drawn

Calculate the length of AC.
Give your answer correct to 3 significant figures.

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

$7.2^2 + b^2 = 18.6^2$

$51.84 + b^2 = 345.96$

$b^2 = 345.96 - 51.84$

$b^2 = 294.12$

$b = \sqrt{294.12} =$

17.1 ..... cm

(Total 3 marks)

$b = 17.14\overline{99}$

18. Chris has two children, Beth and Amy.
Beth is 10 years older than Amy.

Chris says,

"I am twice as old as the sum of Beth's age and Amy's age."

Chris is 40 years old.

How old is Amy?

Amy = x

Beth = $x + 10$

Chris = $2 \times (x + x + 10)$

$= 2(2x + 10) = 4x + 20$.

$4x + 20 = 40$

$4x = 20$

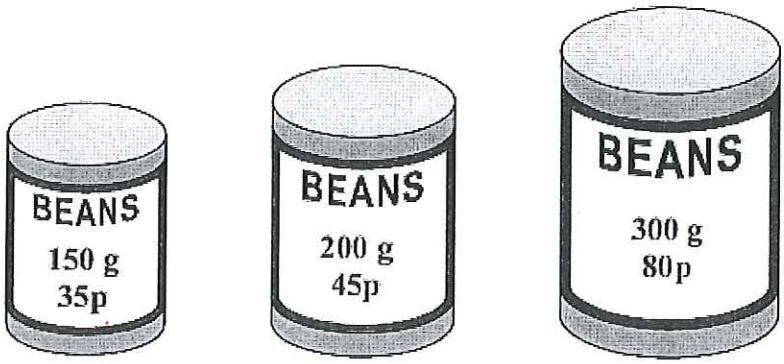
$x = 5$.

5

.....years old

(Total 4 marks)

19. A shop sells tins of beans in three different sizes.



A **B** **C**

Kathy wants to buy exactly 750 g of beans.
She wants to buy the beans at the cheapest possible cost.

Work out the cheapest cost.
You must show all your working.

Could buy (A) 750 ÷ 150 = 5

5 × 35p = £1.75

Could buy (B) + (A) 200 × 3 150 × 1 = 45p × 3 + 35p × 1

600 + 150 = £1.35 £0.35 = £1.70

Could buy (C) + A 300 × 2 + 150 × 1 = 80p × 2 + 35p × 1 = £1.95

600 150 £1.60 + £0.35

£1.70 is the cheapest cost
(3 tins of B + 1 tin of A).

(Total 4 marks)

20. Joe and Ann buy some fruit from the same shop.

Joe buys 4 apples and 3 bananas for £2.50
Ann buys 3 apples and 4 bananas for £2.40

Work out the cost of

(i) one apple,

(ii) one banana.

Signs the same we take away

Signs are different we add

$4a + 3b = 250$ ① $\times 4$

$3a + 4b = 240$ ② $\times 3$.

$16a + 12b = 1000$ ③

$9a + 12b = 720$ ④

③ − ④ $7a = 280$

$a = 40$.

sub in ①.

$160 + 3b = 250$

$3b = 90$

$b = 30$

(i) one apple 40 p

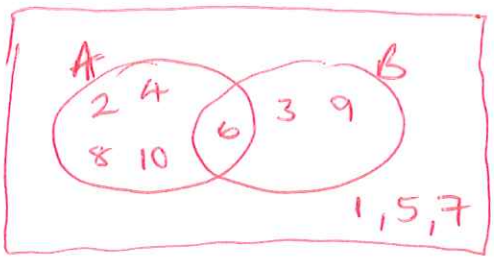
(ii) one banana 30 p

(Total 5 marks)

21. $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{\text{even numbers}\}$

$B = \{\text{multiples of } 3\}$



(*a*) List the members of set B.

3, 6, 9

(1)

(*b*) Find $A \cup B$

2, 3, 4, 6, 8, 9, 10

(1)

(*c*) Find $A \cap B$

6

(1)

x is a member of $\mathscr{E}$

$x \in B$

$x \notin A$

(*d*) What are the possible values of x?

3, 9

(2)

(Total 5 marks)

22. Neville saw this car for sale.

He got a discount of 25% off the price of the car.
He paid £7200 for the car.

Work out the price of the car before the discount.

100% − 25% = 75%

75% = £7200. ÷75

÷75

1% = £96 ×100

×100

100% = £9600

£ 9600.

(Total 3 marks)

23. Keith, Ben and Liz tested a coin to find out if it was biased.
They each threw the coin a number of times.
They counted the number of heads and the number of tails they each got.

The table gives information about their results.

	Keith	Ben	Liz
Number of heads	12	34	57
Number of tails	28	66	243

= 103
= 337

(a) Which person, Keith, Ben or Liz, will have the best estimate for the probability of getting a head on this coin? Explain your answer.

LIZ as she did the MOST trials

.....

.....

.....

(1)

(b) Using all the results in the table, work out an estimate for the probability that the next throw of the coin will be a head.

$103 + 337 = 440$.

$\frac{103}{440} = 0.234...$

$\frac{103}{440}$

.....

(2)

(Total 3 marks)

TOTAL FOR PAPER IS 80 MARKS