1 Look at this information.

Tom was born in **1988**
....
Ben was born in **2000**

Tom and Ben have the **same birthday**.

The ratio of Tom's age to Ben's age on their birthday in **2001** was **13 : 1**.

What was the ratio of Tom's age to Ben's age on their birthday in **2003**?

Write the ratio in its **simplest form**.

☐ : ☐

1 mark

In what year was the ratio of Tom's age to Ben's age **3 : 1**?

Show your method

2 marks

2 **Crisps**

A box contains bags of crisps.
Each bag of crisps weighs **25 grams**.

Altogether, the bags of crisps inside the box weigh **1 kilogram**.

How many bags of crisps are inside the box?

....

1 mark

3 **Coins**

(a)   Jo has these **4 coins.**

Jo is going to take one of these coins at random.
Each coin is equally likely to be the one she takes.

Show that the **probability** that it will be a **10p** coin is $\frac{1}{2}$

1 mark

(b)   Colin has **4 coins** that total **33p.**
        He is going to take one of his coins at random.

        What is the probability that it will be a **10p** coin?
        You **must** show your working.

4   **Travel to work**

(a)   I pay **£16.20** to travel to work each week.
        I work for **45 weeks** each year.

        How much do I pay to travel to work each year?
        Show your working.

£

(b)   I could buy one season ticket that would let me travel for **all 45 weeks.**
        It would cost **£630**

        How much is that per week?

£

5 **Shoe sizes**

Shoe sizes in Britain and Germany are different.

The rule below shows how to change a British shoe size to a German shoe size.

> **Multiply** the British shoe size by **1.25**
> then **add 32**,
> then **round** the answer to the nearest whole number.

Tom's British shoe size is **7**, Karl's British shoe size is $7\frac{1}{2}$

They say:

> 'The rule shows that we have the same **German** shoe size'.

Are they correct? Tick (✔) Yes or No.

☐ Yes   ☐ No

Show your working to explain your answer.

3 marks

6 **Cotton reel**

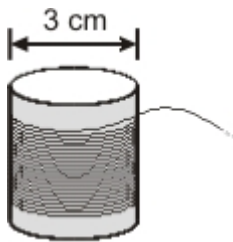(a)   The cross-section of a cylindrical cotton reel is a circle.

The **diameter** of this circle is **3 cm**.

What is the **circumference** of this circle?

.... cm

1 mark

(b)   **91 metres** of cotton goes round the cotton reel.

3 cm

About how many times does the cotton go round the reel?

Show your working, and give your answer to the **nearest ten**.

....

2 marks

7 **Lemonade**

Kate buys **24 cans** of lemonade.

She buys the cans in **packs of 4**

Each pack costs **£1.20**

Pack of 4 Cost £1.20

Steve buys **24 cans** of lemonade.

He buys the cans in **packs of 6**

Each pack costs **£1.60**

Pack of 6 Cost £1.60

Kate pays more for her 24 cans than Steve pays for his 24 cans.

How much more?

.... p
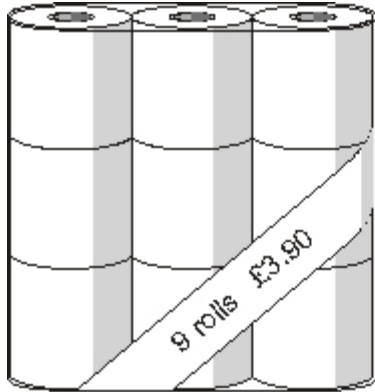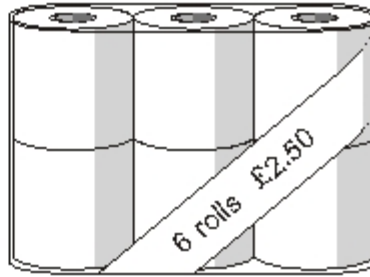
2 marks

8 **Toilet rolls**

A shop sells toilet rolls.

You can buy them in packs of 9 or packs of 6

9 rolls £3.90

6 rolls £2.50

Pack of 9 toilet rolls
£3.90

Pack of 6 toilet rolls
£2.50

Which pack gives you better value for money?

You **must** show your working.

3 marks

9 **Tennis prizes**

Each year, there is a tennis competition in Australia and another one in France.

The table shows how much money was paid to the winner of the men's competition in each country in 2002.

Country	Money
Australia	1000 000 Australian dollars (£1 = 2.70 Australian dollars)
France	780 000 Euros (£1 = 1.54 Euros)

Which country paid **more** money?

You **must** show your working.

Tick (✔) the country that paid more.

☐ Australia   ☐ France

2 marks

10 **CD player**

(a)   Work out the missing values.

> 10%   of   84   = ...
>
> 5%   of   84   = ...
>
> $2\frac{1}{2}$%   of   84   = ...

2 marks

(b)   The cost of a CD player is £84 **plus** $17\frac{1}{2}$% tax.

What is the **total** cost of the CD player?
You can use part (a) to help you.

£

11 **Pens**

Two shops sell packs of pens.

| Supermarket |
| --- |
| Pack of 5 pens |
| £6.25 |

Village shop
Pack of 6 pens
£ 7.20

I want to buy **30 pens**.

In which shop are the pens cheaper?

You **must** show your working.

Tick (✓) your answer.

☐ Supermarket   ☐ Village shop

2 marks

12 A bus company has **62 minibuses.**
On average, each minibus travels **19 miles** on a gallon of fuel and goes **284 miles** each day.
The Company says it needs about **1000 gallons** of fuel every day.

Approximate these numbers and **make an estimate** to show whether what the company says is about right.

You **must** show how you got your answer.

Show your method

2 marks

13

427 children visit a castle.
They go in groups of 15. One group has less than 15.
Every group of children has **one** adult with them.

How many **adults** will need to go?

1 mark

Mr Todd buys **7 drinks** at **48p** each and **8 drinks** at **52p** each.

What is the **total** cost of the 15 drinks?

You **must** show your working.

Show your method

£

2 marks

14 Here are some picture frame sizes.

height in cm	10	12	14	16
length in cm	16	20	24	28
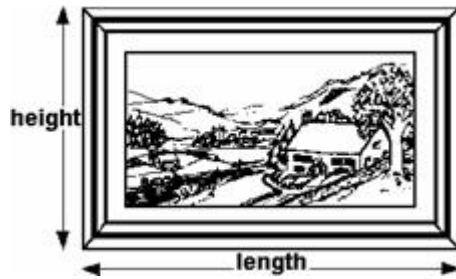
For each frame, the length is **twice** the height, **subtract 4.**

What is the **length** of a frame which has a **height** of **36cm**?

Show your method

cm

2 marks

For each frame, the length **(L)** is **twice** the height **(H)**, **subtract 4.**

Write this in symbols.

L =

2 marks

A **new** frame has its length **twice** its height.
It is made with 126cm of wood.

What is the **length** of this frame?

Show your method

cm

2 marks

15 Susan mixes red and blue paint to make purple.

2 parts of red paint with **3 parts of blue** paint make **purple**.

Susan has **50 ml of red** and **100 ml of blue**.

What is the **maximum** amount of purple she can make?

Show your method

| | ml |

2 marks

16 A school collects money for charity.

This chart shows how much has been collected.
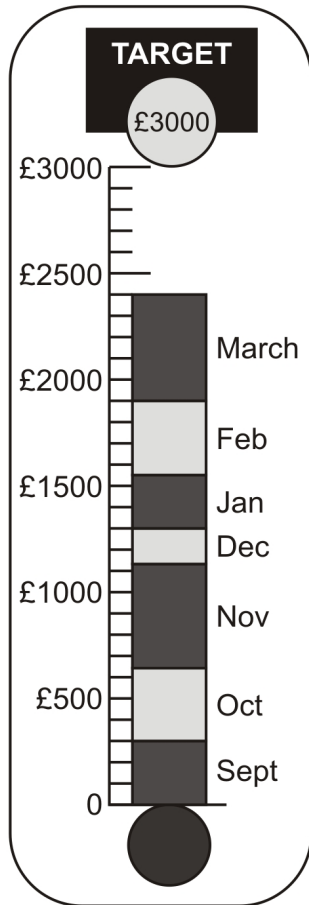
The target is **£3000**.

Estimate how much **more** money the school needs to reach the target.

£ [_____]

1 mark

Anil says,

The chart shows that we will reach the target in two months.

Use the chart to explain why Anil may be wrong.

....

....

....

1 mark

17 Vicki puts 10 books on a shelf.

The **10 books** take up **28 centimetres**.

What is the **mean (average)** thickness of her books?

Show your method

cm

2 marks

The shelf is **120 centimetres** long.

Vicki fills the shelf with a mixture of books like the **first ten books.**

Estimate how many books she can get on the **120 cm shelf**.

Show your method

2 marks

18 Kelly chooses a **section** of a newspaper.

It has **50 words** in it.

She draws a bar chart of the number of letters in each word.
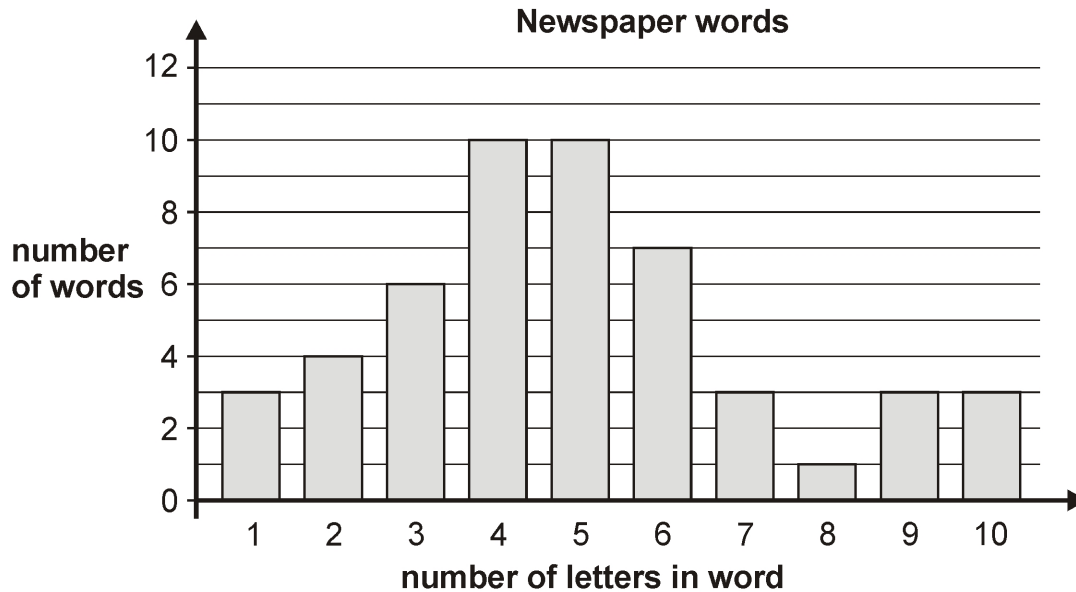
Newspaper words

What **fraction** of the 50 words have **more than 6 letters**?

1 mark

Kelly says,

> *23 of the 50 words have less than 5 letters.*
> *This shows that nearly half of all the words used in the newspaper have less than 5 letters in them.*

Explain why she **could be wrong.**

....

....

....

1 mark

19

Rakes £7.70 each

Spades £9.65 each

Large flower pots £12.75 each

Nicola has **£50**.

She buys 3 flowerpots and a spade.

How much money does she have left?

Show your method

£

£1.45 Seeds

Seeds are **£1.45** for a packet.

Steffan has £10 to spend on seeds.

What is the **greatest number** of packets he can buy?

1 mark

20 Every day a machine makes **100 000 paper clips** which go into boxes.

A **full box** has **120** paper clips.

How many **full boxes** can be made from **100 000** paper clips?

Show your method
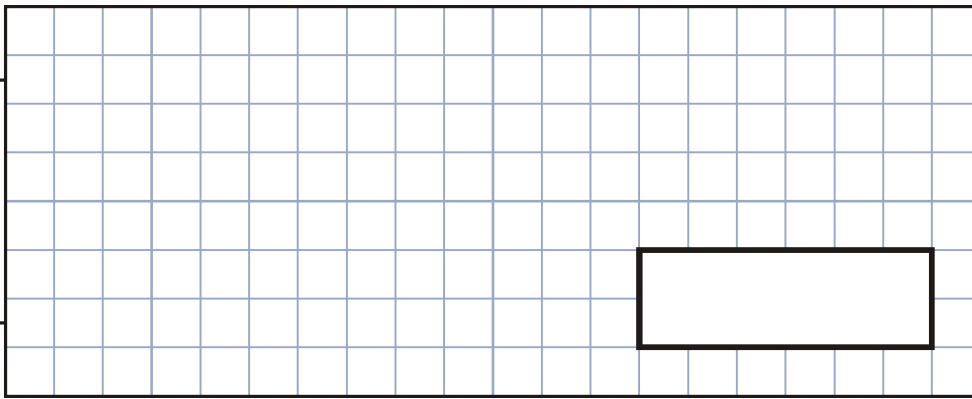
2 marks

Each paper clip is made from **9.2 centimetres** of wire.

9.2 cm
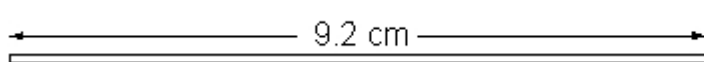
What is the **greatest number** of paper clips that can be made from **10 metres** of wire?

Show your method

2 marks

21

Cheddar cheese costs £7.50 for 1kg.

Marie buys 200 grams of cheddar cheese.

How much does she pay?

£

1 mark

Cream cheese costs £3.60 for 1kg.

Robbie buys a pot of cream cheese for 90p.

How many grams of cream cheese does he buy?

Show your method

_____ g

2 marks

22

2753 people go to a sports event.

Each person pays **£2.30** for a ticket.

What is the **total** amount of **ticket money** collected?

£ _____
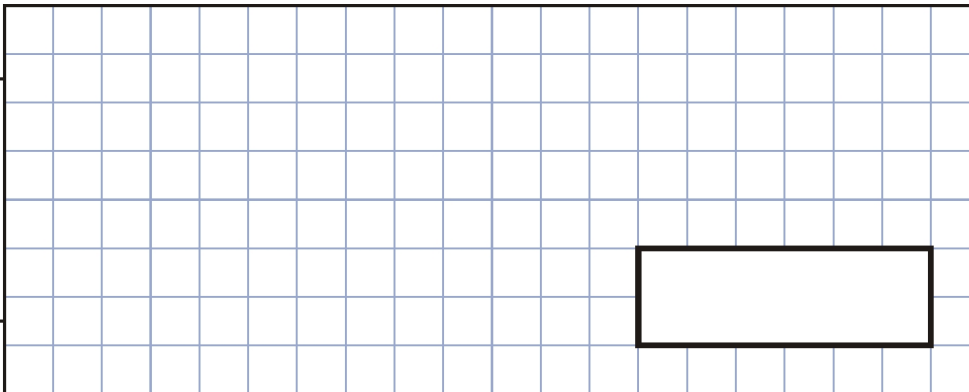
1 mark

Programmes cost **65p** each.

The total money from programme sales is **£612.95**

How many programmes are sold?

Show your method

2 marks
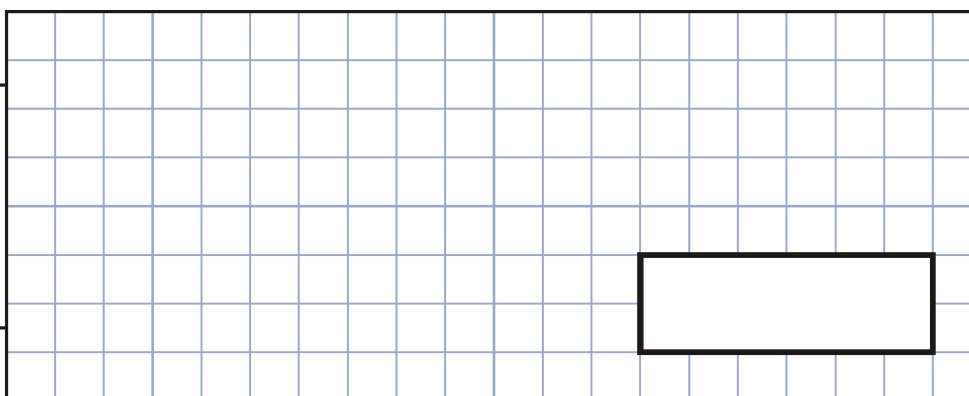
23 Shenaz buys a pack of **24 cans** of cola for **£6.00**

What is the cost of **each can**?

Show your method

2 marks

24

6 green apples for 75p   10 red apples for 90p

Jason bought some bags of green apples and some bags of red apples.

He spent **£4.20**

How many **bags** of each type of apples did he buy?

Show your method

| **bags** of **green** apples | **bags** of **red** apples |

2 marks

Nika and Hassan bought some bags of apples.

Nika says,

'I bought more apples than Hassan, but I spent less money.'
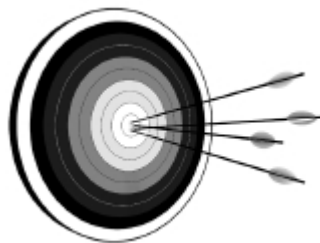
Explain how this is possible.

....

....

....

1 mark

Archery is an Olympic sport.

In 2008, two archers called Park and Zhang were in the women's final.

Both archers shot **12 arrows**.

Zhang won the final **by 1** point.

Complete the table for Zhang below.

You can use the space to show your calculations.

Show your method

Name of archer: **Park**		Name of archer: **Zhang**	
What she scored with her **12 arrows**		What she scored with her **12 arrows**	
Number of points	Frequency	Number of points	Frequency
7	0	7	1
8	4	8	0
9	3	9	
10	5	10	

2 marks

26

30 children are going on a trip.

It costs **£5** including lunch.

Some children take their own packed lunch.

They pay only **£3**

The 30 children pay a total of **£110**

How many children are taking their own packed lunch?

Show your method

| | children |

2 marks

27 A packet contains **1.5 kilograms** of guinea pig food.

Remi feeds her guinea pig **30 grams** of food each day.

How many days does the packet of food last?

Show your method

days

2 marks

28

A box contains 220 matches and weighs 45 grams.

The empty box weighs 12 grams.

Calculate the weight of **one** match.

Show your method

g

2 marks

29
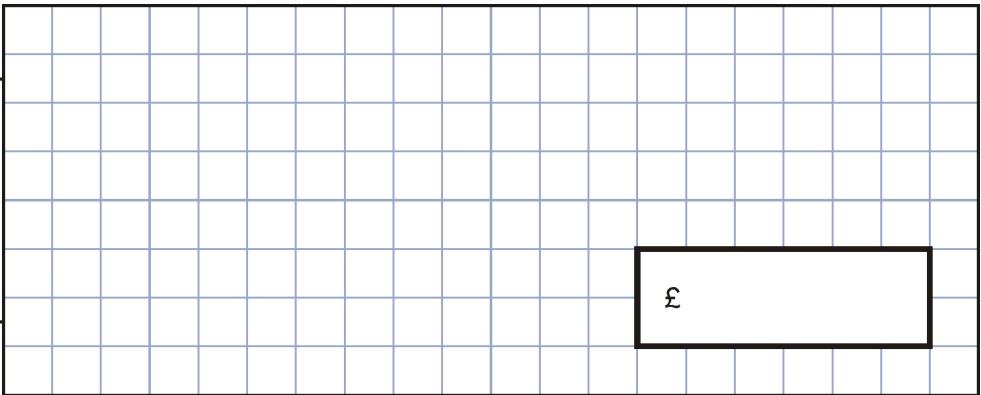
The cost for using a minibus is £1.36 for each kilometre.

8 friends go on a 114 kilometre journey.

They share the cost equally.

How much does each person pay?

Show your method

£

2 marks

30

Small peaches
15p each

Large peaches
25p each
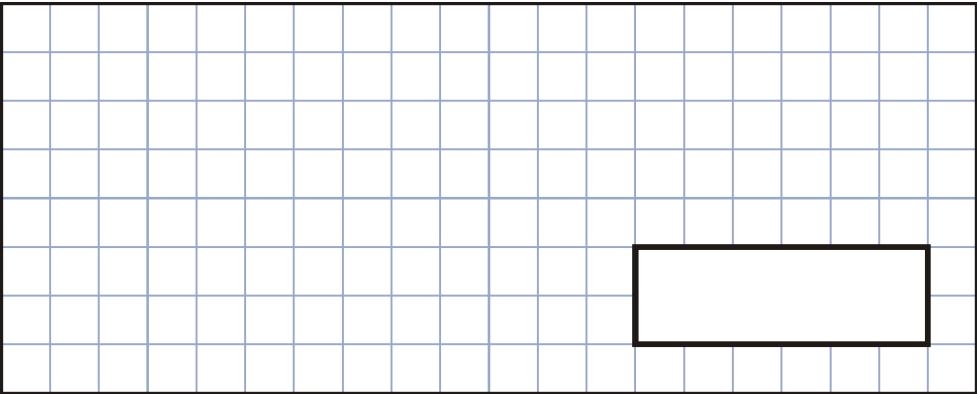
Emily has £5 to spend on peaches.

She decides to buy only small peaches or only large peaches.

How many **more** small peaches than large peaches can she buy for £5?

Show your method

2 marks

31

Emily makes 250 grams of a snack mixture.

15% of the weight is raisins, 25% is banana chips and the rest is peanuts.

How many grams of **peanuts** does she use?

Show your method

g

2 marks

32 Here are three questions and answers about bananas.

On average, how much does each person pay for bananas in supermarkets?

Answer: **56p per kg**

On average, what quantity of bananas does each person eat in one year?

Answer: **10kg**

Who gets money from the sale of bananas?

Answer:

The growers
3%

The workers' company
15%

Transport
19%

Importer
18%

Supermarket
45%
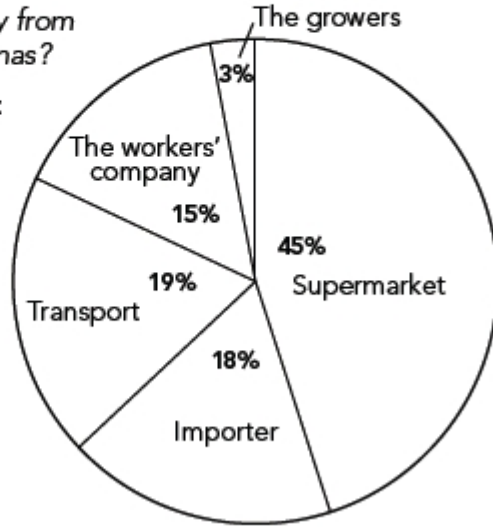
How much of the money each person pays for bananas in one year goes to the **growers**?

Show your method

p

2 marks

33 The photograph shows a crop circle that was made in Mexico.

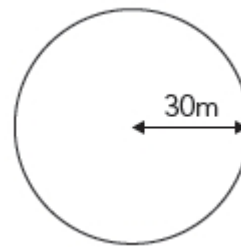People flattened crops to make a pattern inside a circle.

The photograph has been provided courtesy of Greenpeace

Some people are planning to make a crop circle.

Here is what they plan to do:

- They will make a circle of radius **30 m**.

- They will flatten about **60%** of the area of the circle.

- Together, they can flatten **450 m²** in **one hour**.

About how many hours do the people plan to spend making the crop circle?

You will need to use this formula:

The area of a circle is **3.142 × (radius)²**

Show your method

hours (to the nearest hour)

3 marks

34 A farmer has £1200 to buy apple trees and pear trees.

Apple trees cost £24.75 each.
Pear trees cost £12.50 each.

He buys 35 apple trees.

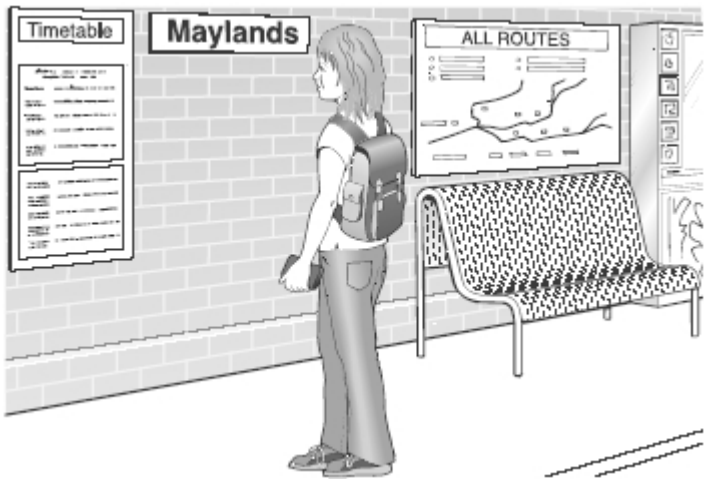How many pear trees can he buy with the money he has left?

Show your method

2 marks

35

Here is part of the morning train timetable from Perth to Midland in Australia.

Perth	07:11	07:20	07:27	07:35	07:43	07:55
Maylands	–	07:28	07:33	07:43	07:49	08:03
Ashfield	–	–	07:38	–	07:54	–
Success Hill	07:25	–	07:41	–	07:57	–
Midland	07:32	07:41	07:48	07:56	08:05	08:16

What time is the first train from Maylands that stops at Success Hill?

Maylands [:]

1 mark

Mr Evans is in Perth and wants to be in Midland by 08:00

What is the time of the **latest** train he can take from Perth?

Perth

:

1 mark

Mark schemes

1   (a)   5 : 1

> ***Do not accept*** *ratio not simplified, eg*
> - *15 : 3*

1

     (b)   2006

2
U1

> *or*

Identifies that Tom will be 18 and Ben will be 6, eg:

- 3 : 1 = 18 : 6

- 13 : 1
  14 : 2 = 7 : 1
  15 : 3 = 5 : 1
  16 : 4 = 4 : 1
  17 : 5
  18 : 6

1

[3]

2   40

> !   *Incorrect units given*
> **Ignore**

[1]

3   (a)   Gives a correct explanation, eg

- $^2/_4$ = ½

- Two of the four coins are 10p so half of them are 10p

- 20p is ¼, so is 1p, and ¼ + ¼ + ½ = 1

- Each coin has ¼ chance and ¼ + ¼ = ½

> *Accept minimally acceptable explanation, eg*
> - $^2/_4$
> - *Two out of four*
> - *Two is half of four*
> - *Two are tens, two not*

Do not accept incomplete explanation, eg

- *It's 50/50*
- *There are two tens, a twenty and a 1p*
- *There are two 10ps*
- *Half the coins are 10ps*
- *20p is, so is 1p 1*

1

(b)   Identifies the values of the four coins as 20, 10, 2 and 1 and
gives the probability ¼, or equivalent probability

> ***!*** ***Values of coins identified but doubt expressed as to whether***
> ***this is the only possible combination***
>
> *Condone*
>
> *Do not accept probability stated without values of coins identified*

U1

[2]

4 (a)   £729(.00)

2

or   Shows the digits 729, eg

- 72900

- 72.90

or

Shows a complete correct method with not more than one computational
error, but with the decimal point correctly positioned, eg

- 20 × 45 = 900
  16 × 45 = 8 × 90 = 720
  720 + 9

-
```
    1620

      45

  64800

   8100

  73900 (error) so £739
```

-

So £ 719

1

(b)   £ 14

Do not accept conceptual error, eg
```
                    1620
                      45
                    6480
                    8100
```

14580 so £145.80

1

[3]

Indicates Yes and gives a correct explanation
that shows or implies both of the values 40.75 and 41.375
eg

- 7 × 1.25 + 32 = 40.75, 7.5 × 1.25 + 32 = 41.375, so they both round to 41

- 8.75 + 32 rounds to 41 and so does 9.375 + 32

- 8.75 gives 9 and 9.375 gives 9 before adding 32, so they will end up the same

3

or   Shows or implies both of the values 40.75 and 41.375 even if there is an
incorrect or no decision, or incorrect further working
eg

- Tom wears 40.8 and Karl wears 41.4 so they don't wear the same size

- 40.75 and 41.375 so they both wear 40

2

or   Shows the value 41.375

or

Shows the value 40.75 or 41 with correct working
eg

- 7.5 × 1.25 + 32 = 41

or

The only error is to add 1.25 rather than multiplying
eg

- Indicates No and shows the values 40.75 and 40.25

- Indicates No and shows the values 41 and 40

> ***Accept minimally acceptable explanation***
> eg, with Yes indicated
> - *They are both 41*
> - *They are 40.75 and 41.375*
>
> ! *40.75 rounded or truncated*
> **Accept 41, 40.8 or 40.7**
> **Do not accept 40**
>
> ! *41.375 rounded or truncated*
> **Accept 41, 41.4, 41.3, 41.38 or 41.37**
> **Do not accept 42**
>
> ! *40.75 from incorrect working*
> **Note that pupils who add 1.25 rather than multiplying generate the shoe sizes 40.25 and 40.75**
> **For 3m or 2m, do not accept explanations based on such misconceptions**
> **eg**
> - *They are both 41 as 7.5 + 1.25 + 32 = 41*
> *7 + 1.25 + 32 = 41*

1

[3]

6   (a)   3π or 9.4 or 9.42(...) or 9.43 with no evidence of an incorrect method

> ! *Answer of 9*
> **Accept provided a correct method or a more accurate value is seen**

1

(b)   970

!   *Follow through from part (a)*
For 2m, accept 9100 ÷ their (a), rounded correctly to the nearest ten, provided 9100 ÷ their (a) is not a multiple of 10 eg, from their (a) as 7.8, accept for 2m

- *1170*

eg, from their (a) as 7, do not accept for 2m

- *1300*

2

or   Shows or implies that the total length should be divided by the circumference, even if the units are incorrect or there are rounding or truncation errors
eg

- 9100 ÷ 9.42

- 91 ÷ 3π

- Digits 96(...) or 97(...) seen

    Accept for 1m, follow through from part (a), even if their (a) is rounded or truncated before being used
    eg, from their (a) as 7.8, accept
    - *9100 ÷ 8*

1

[3]

7   80 p

2

or   Shows the value 0.8(0)

or

Shows or implies a complete correct method with not more than one computational error

eg

- 6 × 1.20 − 4 × 1.60

- (120 ÷ 4 − 160 ÷ 6) × 24

- *7.40 (error) − 6.40 = 1.00*

or

Shows the value 720 or 7.2(0) and 640 or 6.4(0)

1

(U1)

[2]

8 Indicates the pack of 6 toilet rolls
and
gives a correct justification, based on a pair of
comparable values
eg

- The 6-pack costs £1.25 for 3 rolls, but the 9-pack
costs £1.30 for 3 rolls

- $3.9(0) \div 9 = 0.43(...)$
$2.5(0) \div 6 = 0.41(...)$

- For 9 rolls we have 3.90 and
$2.50 \div 2 \times 3 = 3.75$

- 6 rolls: $390 \div 3 \times 2 = 260$, ie 10p more

- The 3 extra toilet rolls in the 9-pack cost
£1.40, but in the 6-pack 3 rolls cost £1.25

- If the 9-pack were decreased by 3 rolls its
price should go down by £1.30, but the
difference is £1.40 so it's a better reduction

- 3 extra rolls cost £1.40 so 12 rolls using the
large pack is $3.90 + 1.40 = 5.30$, whereas
$2.50 + 2.50$ for the small pack is only 5.00

3

or Shows a correct pair of comparable values but
makes either an incorrect or no decision

or

Attempts to find a pair of comparable values,
making not more than one computational or rounding error,
then follows through to make their correct decision
eg

- The 6-pack is *£1.30 (error)* for 3 rolls and
so is the 9-pack, so they are the same

- The 9-pack is £3.90 but should be
$2.50 \div 6 \times 9 = $ *0.41 (rounding error)* $\times 9$
$= 3.69$ so 6-pack is cheaper

2

or Shows, or implies by a correct value, a correct method
to calculate at least one value for comparison,
even if there are computational or rounding errors

  or

 Shows the difference in price for 3, 6, 9 or 18 rolls,
even if the comparable values or the methods to calculate
them are not shown
eg

- The 6-pack is 5p cheaper

- The big pack is 10p more

- 15p difference

- 30p less

1

(U1)

For 3m, do not accept no decision

For 3m, accept correct decision and
any pair of comparable values shown
Note that common pairs (in pounds) are:
1.3 and 1.25   (per 3 rolls)
0.43(...) and 0.41(...) or 0.42   (per 1 roll)
(3.9 and) 3.75   (per 9 rolls)
2.6 (and 2.5)   (per 6 rolls)
7.8 and 7.5   (per 18 rolls)
15.6 and 15   (per 36 rolls)
23.4 and 22.5   (per 54 rolls)
1.4 and 1.25 [or 1.3]   (3 extra rolls)
2.3(...) and 2.4   (rolls per pound)

! ***Comparison is per 9 rolls or per 6 rolls***
but the given price is not restated
Condone

eg, for 3m accept

- *The 6-pack, because 9 rolls*
should be £3.75

! ***Units omitted, incorrect or inconsistent***
Condone provided the pupil's intention is
clear
eg, for 3m accept
- *The 6-pack, because 3.9(0) ÷ 9 = 43*
2.5(0) ÷ 6 = 42

! ***Additional incorrect working***
Ignore

Note that common calculations are:

3.9 ÷ 3 or 2.5 ÷ 2	*(per 3 rolls)*
3.9 ÷ 9 or 2.5 ÷ 6	*(per 1 roll)*
2.5 ÷ 2 × 3	*(per 9 rolls)*
3.9 ÷ 3 × 2	*(per 6 rolls)*
3.9 × 2 or 2.5 × 3	*(per 18 rolls)*
3.9 × 4 or 2.5 × 6	*(per 36 rolls)*
3.9 × 6 or 2.5 × 9	*(per 54 rolls)*
3.9 – 2.5 or 2.5 ÷ 2 [or 3.9 ÷ 3](3 extra rolls)	
9 ÷ 3.9 or 6 ÷ 2.5	*(rolls per pound)*

[3]

9   Indicates France and gives a correct justification
eg

- 1000 000 ÷ 2.7 = 370 370.(…),
  780 000 ÷ 1.54 = 506 493.(…)

- $\dfrac{1000\,000}{2.7} < \dfrac{780\,000}{1.54}$

- 1000 000 ÷ 2.7 × 1.54 = 570 370.(…)

- 780 000 ÷ 1.54 × 2.7 = 1 367 532.(…)

2

or   Indicates France and gives a partial justification
eg

- 1000 000 ≈ £400 000, 780 000 ≈ £500 000

- Australia: 370
  France: 506
  [values truncated with no indication of method or that original
  values were of the same magnitude]

or

Gives a correct justification but makes an incorrect or no decision

or

Gives a correct justification with not more than one computational or
rounding error, but follows through to make their correct decision

1

(U1)

Accept for 2m, minimally acceptable justification

eg

- *370 370 and 506 493 (or 506 494) seen*

- $\dfrac{1000000}{2.7}$, $\dfrac{780000}{1.54}$

- *1000000 ÷ 270 = 3703.(…) (or 3704),*
  780 000 ÷ 154 = 5064.(…) (or 5065)

- *570 370.(…) seen*

- *1367 532.(…) seen*

! Values rounded or estimated

For 2m, accept values of 370 0(00) and
500 0(00) or better, 570 000 or better, or 1400000 or better

Accept other estimates only if a correct
method or a more accurate value is seen
eg, accept

- *£1 is about $2\frac{1}{2}$ dollars, so 1000 000*

  dollars is about £400 000, £1 is about $1\frac{1}{2}$ euros, so
  780 000 euros is about £500 000

For 2m or 1m, do not accept if justification simply repeats the decision made

eg

- *1000 000 Australian dollars are less*
  than 780 000 euros

[2]

10 (a) Gives all three correct values, ie

8.4
4.2
2.1

or equivalent

> *!*   ***Units given***
> *Ignore*

2

or   Gives two correct values

> *!*   ***Follow through***
> *For 1m, allow follow through from an*
> *incorrect value that is correctly divided by 2,*
>
> *provided their values are not 10, 5, $2\frac{1}{2}$ or*
> *84, 42, 21*
>
> *eg, for 1m accept*
>
> •
>
> | 0.84 | *(error)* |
> |------|-----------|
> | 0.42 | |
> | 0.21 | |
>
> •
>
> | 8.4 | |
> |------|-----------|
> | 4.3 | *(error)* |
> | 2.15 | |

1

(b)   £98.70

2

or   Shows the digits 987

or

Shows or implies the addition of the three

values corresponding to 10%, 5% and $2\frac{1}{2}$%
eg

- 8.4 + 4.2 + 2.1

- 14.7 seen

- The sum of their 3 values from part (a) seen
  [with or without addition to 84]

or

Shows or implies a complete correct method
with not more than one computational error
eg

- 1.175 × 84

- 84 + $\frac{17.5}{100}$ × 84

1

[4]

11 Indicates the village shop
and
gives a correct justification, based on
correctly calculating a pair of comparable values
eg

- At the supermarket 6.25 × 6 = 37.5(0)
  At the village shop 7.20 × 5 = 36

- 6.25 × 6 – 7.2 × 5 = 1.5

- 6.25 ÷ 5 = 1.25,
  7.20 ÷ 6 = 1.2(0)

- £75 for 60 or £72 for 60

- For £1 you get $\frac{4}{5}$ of a pen or $\frac{5}{6}$ of a pen

- You pay 95p extra for 1 more pen, but they're at least £1.20 each so it
  must be a better deal

2

or Shows a correct pair of comparable values but makes either an incorrect
or no decision
or
Shows a complete correct method for finding a pair of comparable values with
not more than one computational or rounding error, and follows through to make
their correct decision
eg

- 6 × 6.25, 5 × 7.20 [village shop indicated]

- 6.25 ÷ 5 = *1.05 (error)*,
  7.20 ÷ 6 = 1.20 [supermarket indicated]

 or

 Makes a correct decision but the justification uses only the difference
between a pair of comparable values
eg

- The packs of 6 would be £1.50 cheaper

- A pen is 5p cheaper

1

(U1)

[2]

12 (a) Sensible approximation of at least two of 62, 19, and 284, eg:

• 62, 20, 300

• 60, 19, 300

• 60, 20, 284

• 60, 20, 300

> *Direct calculation using the numbers given **without approximation**
> of **at least 2** of them should **not** be awarded a mark.*

1

(b) Correct computation using the approximations in answer (a), eg:

• $62 \times 300 \div 20 = 930$

• $60 \times 300 \div 19 = 947$

• $60 \times 284 \div 20 = 852$

• $60 \times 300 \div 20 = 900$

1

[2]

13 (a) 29

1

(b) Award **TWO** marks for £7.52 **with** appropriate working (see below), even if there is an error in the working.

If answer is incorrect, award **ONE** mark for use of an appropriate method and a partially correct computation, eg:

- $7 \times 48 + 8 \times 52 = 336 + 406$ (incorrect second part)

- $7(48 + 52) + 52 = 7 \times 100 + 52 = 742$ (incorrect)

- $7 \times 40 + 7 \times 8 + 8 \times 50 + 8 \times 2 = 7 \times 47 \times 16 \times 58 \times 2$ (incorrect)

  *Accept £7.52 **OR** £7 52p **OR** £7 52 **OR** answers in words **OR** combination of numbers and words.*

  *Mark can **only** be awarded for evidence of calculation taking place. It cannot be awarded if the expression is set out but partially correct computation is **not** in evidence.*

Up to 2

[3]

14 (a) Award **TWO** marks for correct answer of 68cm.
If answer is incorrect award **ONE** mark if any method is used which shows evidence of doubling 36 **AND** subtracting 4, eg:

- $30 + 6 \times 2 - 4$

Up to 2

(b) Award **TWO** marks for expressions such as:

- $L = 2H - 4$

- $L = 2(H - 2)$

- $L = H + H - 4$.

If incorrect award **ONE** mark for evidence of multiplication of H by 2,
eg: **2H   H2   H × 2   2 × H   2.H   H.2**
or **ONE** mark for evidence of subtraction of 4,
eg: **L = H – 4**

  *Do **not** accept L = × 2 – 4 = H*

  *Do **not** award marks for a repeat of the formula in words as given in the question.*

Up to 2

(c)   Award **TWO** marks for 42cm, even if there are errors in the working.

If answer is incorrect, award **ONE** mark for evidence that the
relationship "length is twice the height" has been used, eg:

- 2H + 4H = 126

- H + 2H + H + 2H = 126

- 20 + 40 + 20 + 40 = 120
    The answers may be implicit, eg:
    - *21 + 42 + 21 + 42 = 126*
    (Two marks)
    - *126 ÷ 6 = 21 × 2 = 42*
    (Two marks)
    - *126 ÷ 3 (answer incomplete*
    One mark)

                                                    Up to 2

                                                                        [6]

15   Award **TWO** marks for the correct answer of 125ml.

If answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg:

- 50 + (3 × 50 ÷ 2)

- 50 = 2 × 25
  3 × 25 = 75
  50 + 75
                    Accept answer without units.

                                                    Up to 2

                                                                        [2]

16   (a)   Answer in the range of £600 to £650, inclusive.

                                                                1

(b)   Explanation which indicates that the amounts raised each
month can vary **AND** that
the money raised may be either insufficient to reach the target in
2 months or enough to reach the target in 1 month, eg

- 'They could have two months like December'

- 'In April they might get more money than any month before'
    *Accept appropriate explanations related to the answer
    given in 19a, even if this is incorrect.*
    Do not *accept vague or arbitrary reasons, eg:*
    'They might not get any more money';
    'People have spent all their money on charity';
    'It's not enough time'.

                                                                1

                                                                        [2]

17 (a) Award **TWO** marks for correct answer of 2.8 cm.
If answer is incorrect, award **ONE** mark for any appropriate calculation
even if the answer is incorrect, eg:

- 28 ÷ 10 = wrong answer.

  *A calculation **MUST** be performed for award of one mark.*

Up to 2

(b) Award **TWO** marks for WHOLE NUMBER ANSWER in the
range 40 to 50 inclusive, eg:

- 42.8

 If answer is outside range, award **ONE** mark for an
appropriate calculation, eg:

- 120 ÷ 28 × 10 = wrong whole number answer.

- 120 ÷ 30 × 10 = wrong whole number answer.

- 30cm is 10 books.
  60cm is 20 books.
  120cm is ... wrong answer.

  *If answer is outside range, a calculation **MUST** be performed for
  award of one mark. If calculation is based upon incorrect answer to
  16a, award **TWO** marks for correct calculation using an appropriate
  strategy **AND** rounding of answer to whole number, even if outside
  range 40–50, eg:*

  - *120 ÷ answer to 16a = rounded whole number.*
    OR
    *ONE mark if there is either an error in calculation
    or failure to round to whole number.*

Up to 2

[4]

18 (a) $^1/_5$ **OR** $^{10}/_{50}$

Accept other equivalent fractions, eg: $^{20}/_{100}$

1

(b)   Explanations which imply that the results from a small sample cannot safely be applied to a large one, eg:

- 'You could be wrong because every section is different'

- 'The article is only a small proportion of the whole newspaper'

- 'The rest could be different'

- 'You can't judge a whole newspaper by one article'
    Do not *accept vague or arbitrary explanations such as:*
    'She might not have counted right';
    'The words in the newspaper might be big';
    'There are more bigger words than small'.

1

[2]

19   (a)   Award **TWO** marks for a correct answer of £2.10
    *Accept £2.10p **OR** £2 10 **OR** £2 10p*
    Do not *accept for **TWO** marks £210*
    OR *incorrect representations of money values, eg*
    *£2.1 **OR** £210p*

If answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg,
    Calculation need not be performed for the award of the mark, but a complete method must be apparent.

50 – (12.75 × 3 + 9.65)
    *Accept £2.1 **OR** £210 **OR** £210p as evidence of an appropriate method for **ONE** mark.*

up to 2

(b)   6
    Do not *accept non-integer answers such as 6.8*

1

[3]

20   (a)   Award **TWO** marks for the correct answer of 833.
    Do not *award **TWO** marks for answers which are not whole numbers, eg 833.33*

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg 100 000 ÷ 120.

Accept as evidence of an appropriate method, 833.33 ... rounded to one or more decimal places.
    Calculation need not be completed for the award of the mark.

up to 2

(b)   Award **TWO** marks for the correct up to answer of 108.

> ***Do not*** *award **TWO** marks for answers which are not whole numbers, eg 108.6*

If the the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg: 1000 ÷ 9.2

Accept as evidence of an appropriate method, 109 **OR** 108.695 rounded to one or more decimal places.

> *Calculation need not be completed for the award of the mark.*
>
> *For **ONE** mark, accept correctly rounded answers based upon the wrong conversion of units, eg*
>
> $\frac{10\times10}{9.2} = 10.8 = 10$

2

[4]

21 (a)   £1.50

1

(b)   Award **TWO** marks for the correct answer of 250

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

- 360 ÷ 90 = 4

- 1000 ÷ 4

> *Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[3]

22 (a)   £6331.90

> *Accept £6331.90p **OR** £6331 90*
>
> ***Do not*** *accept £6331.9*

1

(b)   Award **TWO** marks for the correct answer of 943.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg 61295 ÷ 65 **OR** 612.95 ÷ 0.65

> ***Do not*** *accept* 612.95 ÷ 65.
>
> *Calculation need not be performed for the award of the mark.*

Up to 2

[3]

23

Award **TWO** marks for the correct answer of 25p **OR** £0.25 **OR** 25 pence.

If the answer is incorrect, award **ONE** mark for evidence of appropriate working,
eg 600 ÷ 24 = wrong answer.

> *Accept £0 25 **OR** £0.25p **OR** £0 25p **OR** 25 **OR** 0.25 **OR** £0-25.*
>
> *Calculation must be performed for the award of **ONE** mark.*

Up to 2

[2]

24

(a)   Award **TWO** marks for correct answer as shown:

| 2 | **bags** of **green** apples |

| 3 | **bags** of **red** apples |

> *Both numbers must be correct for the award of the marks.*

If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg

Listing of cost of apples:

75	90
150	180
225	270

> *Calculation must be performed for the award of **ONE** mark.*

Up to 2

(b)   An explanation that shows how it is possible to buy more apples but
spend less money, eg

- 'Nika buys 2 bags of red apples, giving 20 apples for £1.80, and Hassan buys 3 bags of green apples, giving 18 apples for £2.25'.

  > ***Do not** accept vague or arbitrary explanations, eg*
  > - *'She got bigger bags than he did';*
  > - *She bought a lot of small ones'.*
  >
  > *Ignore slight errors in arithmetic that do not contradict the explanation.*

1

[3]

25

Completes the table for Zhang correctly with frequencies of 7 (for 9 points) and
4 (for 10 points), ie

7
4

2
U1

or

Shows one of the values 109, 110, 102 or 103

OR

Shows a correct method for Zhang that scores one more than the total for Park.

> *! For 1m, a total that uses less than 12 arrows for Zhang*
>
> *Condone*
>
> *! For 1m, accept a follow through for their incorrect total for Park*

1

[2]

26 Award **TWO** marks for the correct answer of 20

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

- 30 × £5 = £150
  £150 − £110 = £40
  £40 ÷ £2 = 20

- £110 ÷ 30 = £3 each, with £20 left over
  £20 ÷ £2 = 10
  30 − 10 = 20

OR

a trial and improvement method, eg

- 30 × £3   = £90
  10 × £3 + 20 × £5   = £130
  15 × £3 + 15 × £5   = £120

> ***Calculation must be performed for the award of*** ONE ***mark.***
>
> *A 'trial and improvement' method must show evidence of improvement, but a final answer need not be reached for the award of* **ONE** *mark.*

Up to 2 (U2)

[2]

27 Award **TWO** marks for the correct answer of 50

If the answer is incorrect, award **ONE** mark for evidence of appropriate working using common units, eg

- 1500 ÷ 30 = wrong answer

> ***Calculation must be performed for the award of*** ONE ***mark.***
>
> ***Do not*** *accept 1.5 ÷ 30 as evidence of appropriate working.*

Up to 2

[2]

28

Award **TWO** marks for the correct answer of 0.15

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

45 − 12 = 33

33 ÷ 220

> *Accept equivalent fractions, eg $\frac{3}{20}$*
> *Accept for **ONE** mark 0.015 **OR** 15*
> **OR** *1.5 **OR** 150 as evidence of appropriate method.*
> *Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

29

Award **TWO** marks for the correct answer of £19.38

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

114 × 1.36 ÷ 8

OR

114 × 136 ÷ 8

> *Accept for **ONE** mark £1938 **OR** £1938p as evidence of appropriate working.*
> *Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

30

Award **TWO** marks for the correct answer of 13

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

500 ÷ 15 = 33

500 ÷ 25 = 20

33 − 20

> *Award **ONE** mark for an answer of $13\frac{1}{3}$ **OR** 13.˙3 **OR** 13.3 **OR** 13.33, etc.*
> *Award **ONE** mark for sight of 20 **AND** 33 with no evidence of an incorrect method.*
> *Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

31 Award **TWO** marks for the correct answer of 150

If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg:

- 15 + 25 = 40
  100 − 40 = 60
  10% of 250 = 25
  25 × 6 = wrong answer

OR

- 100% − 40% = 60%
  60% of 250 = wrong answer

OR

- 15% of 250 = $37\frac{1}{2}$

  25% of 250 = $62\frac{1}{2}$

  $250 - 37\frac{1}{2} - 62\frac{1}{2}$ = wrong answer

    Working must be carried through to reach an answer for the award of ONE mark.

    Up to 2

[2]

32 16.8p or 17p or equivalent

2

or

Shows the digits 168 or 17

or

Shows a complete correct method with not more than one computational or rounding error
eg
- 56 × 10 × 3 ÷ 100
- 5.6(0) × 0.03
- 560 ÷ 100 = 5.6
6p *(premature rounding)* × 3 = 18

    ! Money
    See general guidance

1

[2]

33 4

3

U1

or

Shows or implies at least two of these three steps correctly:

1. A correct method for evaluating the area of the circle in which the squaring is interpreted correctly

2. A correct method for finding 60% of a quantity

3. Division by 450

eg:

- Shows the value 3.7(...) or 3.8 [*1, 2 and 3 but rounding omitted*]

- Shows the value 1696.(...) or 1697 [*1 and 2*]

- $\pi \times 900 \times 6 \div 10$ [*1 and 2*]

- $3.142 \times 30^2 \times 60 \div 100 \div 450$ [*2 and 3*]

- $3.142 \times 30^2 = 188.52$ (*error*)
  $188.52 \times 0.6 \div 450 = 0.25(...)$ [*2 and 3*]

- $2827.(...) \div 450$ [*1 and 3*]
    > **Do not accept** *Ambiguous implication for method*
    > *eg, 6.284 to imply 1 and 3*

2

or

Shows or implies one of the three steps above correctly, eg:

- Shows the value 2827.(...) or 2828 [*1*]

- 3.142×900 [[*1*]]

- $\pi \times 30 \times 30$ [*1*]

- 60% of 188.52 (error) = 113.(...) [*2*]

- $3.142 \times 30 = 94.26$ (*error*)
  $94.26 \div 450 = 0.2(...)$ [*3*]

1

[3]

34 26

Do not accept answer of £26

2

or

Shows or implies a complete method with not more than one computational error or rounding error

eg

- 35 × 24.75 = 860 (error)
  1200 − 860 = 340
  340 ÷ 12.5 = 27.2
  Answer = 27

- (1200 – 35 × 24.75) ÷ 12.5

- 1200 – 866.25 = 333.75
  333.75 ÷ 12.5

or

26.7 seen

or

Shows the correct total for the trees, ie £1191.25

or

Shows the correct change, ie £8.75

> *Do not accept answer of 27 without a correct method shown or implied*
> *! Method used for ÷ 12.5 is repeated subtraction*
> *Do not accept as a correct method*

1

[2]

35 (a)   07:33

> *The answer is a specific time.*

1

(b)   07:35

> *The answer is a specific time.*

1

[2]