

Multiplication

TB Y6 ARE

Name: _____

Class: _____

Date: _____

Time: **80 minutes**

Marks: **79 marks**

Comments:

1

These are the prices of cheese in a shop.



Cheddar cheese
82p for 100 grams

Edam cheese
66p for 100 grams

Cottage cheese
45p for 100 grams

Mina buys **200g** of Cheddar cheese and **150g** of Edam cheese.

How much does she pay altogether?



Show your method

| |
|---|
| £ |
|---|

2 marks

Seb buys some cottage cheese for £1.35.

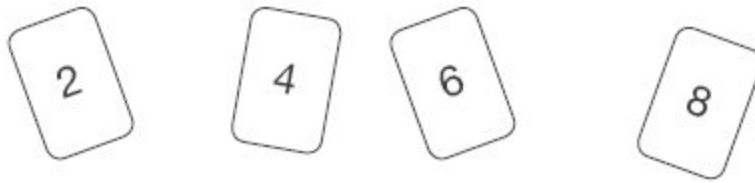
How many grams of cottage cheese does he get?



| |
|---|
| g |
|---|

1 mark

2



Use all four digit cards to make this number sentence correct.



×

> 5000

1 mark

3

Dev has a bag of 50p coins and Holly has a bag of 20p coins.



Dev's bag



Holly's bag

Both bags have the same amount of money in.

There are **thirty** 50p coins in Dev's bag.

How many 20p coins are there in Holly's bag?

Show your method

20p coins

2 marks

4

$0.06 \times 7 =$

1 mark

5 Here are six cards.

| | | |
|-------------|--------------|---------------|
| $\times 10$ | $\times 100$ | $\times 1000$ |
| $\div 10$ | $\div 100$ | $\div 1000$ |

Use a card to complete each calculation.

$$5.3 \boxed{} = 0.53$$

$$5.3 \boxed{} = 5300$$

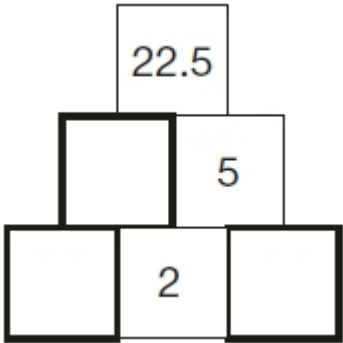
$$5.3 \boxed{} = 0.053$$

2 marks

6 Here is a number pyramid.

The number in a box is the **product** of the two numbers below it.

Write the missing numbers.



2 marks

7

The area of a rugby pitch is 6,108 square metres.

A football pitch measures 112 metres long and 82 metres wide.

How much larger is the area of the football pitch than the area of the rugby pitch?

Show your method

square metres

3 marks

8

$$23 \times 36 = 23 \times 9 \times \square$$

1 mark


11 Calculate 465×52



2 marks

12 Three single-digit numbers multiply to make 504


Write the missing numbers.


$$\square \times \square \times \square = 504$$

1 mark

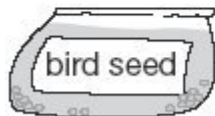
13 Two 2-digit numbers multiply to make 176

Write the two missing numbers.


$$\begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} \times \begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} = 176$$

1 mark

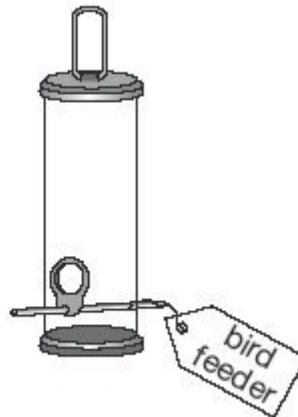
14 A shop sells food for birds.



£3.79 for
a bag



£1.35 for
a bag



£8.95
each

Lara has £10 to spend on peanuts.

How many bags of peanuts can she get for £10?

Answer →

1 mark

Amir has £20

He wants to buy a bird-feeder and 4 bags of bird seed.

How much **more** money does he need?

Answer →

Show your method

| | |
|---|--|
| £ | |
|---|--|

2 marks

15 Calculate 45.3×6

Answer →

1 mark

16 Calculate $17 \times 5 \times 4$

Answer →

1 mark

17 Forest School sells badges for charity.



For each badge sold, **£1.20** is given to a charity.

How much does the charity get when **12** badges are sold?

↙

| | |
|---|--|
| £ | |
|---|--|

1 mark

If the charity got **£24**, how many badges were sold?

↙

| |
|--|
| |
|--|

1 mark

18 17 multiplied by itself gives a **3-digit** answer.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 7 | × | 1 | 7 | = | 2 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|

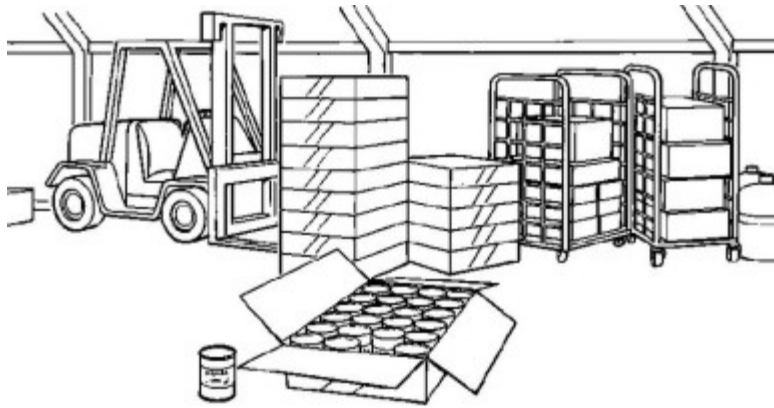
What is the **smallest** 2-digit number that can be multiplied by itself to give a **4-digit** answer?

↙

| | | | | | | | | | |
|--|--|---|--|--|---|--|--|--|--|
| | | × | | | = | | | | |
|--|--|---|--|--|---|--|--|--|--|

1 mark

19



In a supermarket storeroom there are

7 boxes of tomato soup

5 boxes of pea soup

4 boxes of chicken soup

There are **24 tins** in every **box**.

How many **tins** of soup are there **altogether**?

Show your method

2 marks

20

Use the digits **2, 3** and **4** once to make the multiplication which has the **greatest product**.

Handwritten mark

$$\begin{array}{|c|c|} \hline \square & \square \\ \hline \end{array} \times \begin{array}{|c|} \hline \square \\ \hline \end{array}$$

1 mark


21

Calculate **2307 × 8**

Handwritten mark

1 mark

22 Write what the **three** missing digits could be in this calculation.



| | |
|--|--|
| | |
|--|--|

 ×

| |
|--|
| |
|--|

 =

| | | |
|---|---|---|
| 3 | 7 | 8 |
|---|---|---|

1 mark

23 Calculate **47 × 32**



Show your **working**.
You may get a mark.

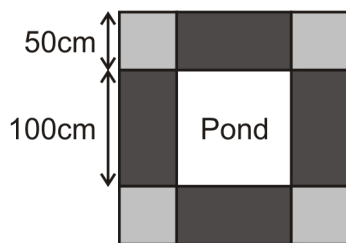
2 marks

24 Mr Singh buys paving slabs to go around his pond.

PAVING SLABS

£1.95 each Square slabs
50cm by 50cm

£3.50 each Rectangular slabs
100cm by 50cm



He buys 4 rectangular slabs and 4 square slabs.

What is the total cost of the slabs he buys?

Show
your
method

£

2 marks

Mr Singh says,

'It would cost more to use square slabs all the way round'.

Explain why he is correct.

.....

.....

.....

1 mark

25

Write in the missing digits to make this correct.



$$\begin{array}{r} \square \quad 4 \quad \square \\ \times \quad \quad \quad 6 \\ \hline 2 \quad 0 \quad 5 \quad 2 \\ \hline \end{array}$$

2 marks

26

$$56 \times 100 = \square$$

1 mark

27

Emma saves £3.50 each week.

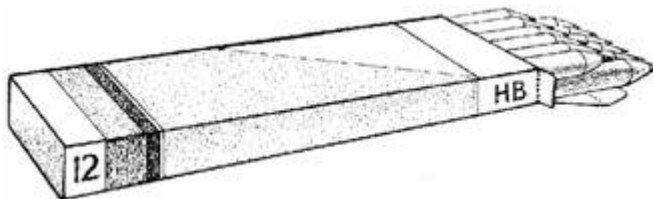
How much has she saved after 16 weeks?

£

1 mark

28

There are **12 pencils** in a box.



31 $20 - 4 \times 2 =$

1 mark

32 $2.6 \times 10 =$

1 mark

33 $0.3 \times 3 =$

1 mark

34
$$\begin{array}{r} 729 \\ \times 54 \\ \hline \end{array}$$

Up to 2 marks

35 $4.6 \times 100 =$

1 mark

36
$$\begin{array}{r} 2195 \\ \times 3 \\ \hline \end{array}$$

1 mark

37 $20.61 \times 10 =$

1 mark

38 $319 \times 6 =$

1 mark

39
$$\begin{array}{r} 284 \\ \times 47 \\ \hline \end{array}$$

2 or 1 marks

40
$$\begin{array}{r} 34.9 \\ \times 5 \\ \hline \end{array}$$

1 mark

41 $12 \times 5 \times 6 =$

1 mark

42 $2185 \times 7 =$

1 mark

43

$$\begin{array}{r} 125.9 \\ \times 4 \\ \hline \end{array}$$

1 mark

44

$$\frac{1}{5} \times 70 =$$

1 mark

45

$$0.06 \times 100 =$$

1 mark

46

$$\begin{array}{r} 72 \\ \times 63 \\ \hline \end{array}$$

2 or 1 marks

47

$$\begin{array}{r} 35.8 \\ \times 3 \\ \hline \end{array}$$

1 mark

48

$$5.014 \times 10 =$$

1 mark

49

$$\begin{array}{r} 319 \\ \times 72 \\ \hline \end{array}$$

2 or 1 marks

50

$$7.62 \times 7 =$$

1 mark

51

$$0.03 \times 7 =$$

1 mark

52

$$45.9 \times 100 =$$

1 mark

53

$$\begin{array}{r} 3456 \\ \times 5 \\ \hline \end{array}$$

1 mark

54

$$82.7 \times 6 =$$

1 mark

55

$9.03 \times 10 =$

1 mark

56

$154 \times 7 =$

1 mark

Mark schemes

1

- (a) Award **TWO** marks for the correct answer of £2.63

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

$$82\text{p} \times 2 = 164\text{p}$$

$$66\text{p} + 33\text{p} = 99\text{p}$$

$$164\text{p} + 99\text{p} = \text{wrong answer}$$

*Accept for **ONE** mark £263 **OR** £263p as evidence of appropriate working.*

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

Up to 2

- (b) 300

1

[3]

2

$$\begin{array}{|c|c|} \hline 6 & 2 \\ \hline \end{array} \times \begin{array}{|c|c|} \hline 8 & 4 \\ \hline \end{array}$$

OR

$$\begin{array}{|c|c|} \hline 6 & 4 \\ \hline \end{array} \times \begin{array}{|c|c|} \hline 8 & 2 \\ \hline \end{array}$$

Numbers may be given in either order.

[1]

3

- Award **TWO** marks for the correct answer of 75

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

- $30 \times 50 = 1500$
 $1500 \div 20$

OR

- $30 \times 50\text{p} = \text{£}15$
5 20p coins make £1
 5×15

OR

- $50\text{p} \div 20\text{p} = 2.5$
 30×2.5

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

Up to 2

[2]

4 0.42

[1]

5 Award **TWO** marks for all three calculations completed correctly, as shown:

$$5.3 \div 10 = 0.53$$

$$5.3 \times 1000 = 5300$$

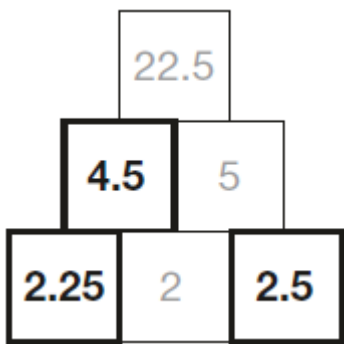
$$5.3 \div 100 = 0.053$$

If the answer is incorrect, award **ONE** mark for two calculations correct.

Up to 2

[2]

6 Award **TWO** marks for three numbers correctly placed.



If the answer is incorrect award **ONE** mark for two numbers correctly placed.

Commentary: This question involves multiplying and dividing decimals where the answer has up to two decimal places (6F9).

Up to 2

[2]

7 Award **THREE** marks for the correct answer of 3076 square metres.

If the answer is incorrect, award **TWO** marks for:

- sight of 9184 as evidence of the multiplication for the first step completed correctly.

OR

- evidence of an appropriate method which contains no more than **ONE** arithmetical error, e.g:

$$\begin{array}{r} 112 \\ \times \underline{82} \\ 8960 \\ \underline{224} \\ 9187 \text{ (error)} \end{array}$$

$$\begin{array}{r} 9187 \\ - \underline{6108} \\ 3079 \end{array}$$

- Award **ONE** mark for evidence of an appropriate method which contains more than **ONE** arithmetical error.

Do not award any marks if the error is in the place value of the multiplication, e.g. the omission of the final zero when multiplying by tens, e.g.

$$\begin{array}{r} 112 \\ \times \underline{82} \\ 896 \\ \underline{224} \\ \text{wrong answer} \end{array}$$

Commentary: As well as a range of 1 mark and 2 mark questions, one of the questions in a suite of tests may now attract three marks. The solution to a 3 mark question may involve more steps or, as in this example, more complex calculations.

Up to 3m

[3]

8

4

[1]

9

Award **TWO** marks for the correct answer of 75.

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

- 125 ÷ 50 = 2.5
2.5 × 30 = wrong answer

OR

- 50g oats 30g raisins
25g oats 15g raisins (÷ 2)
125g oats wrong answer (× 5)

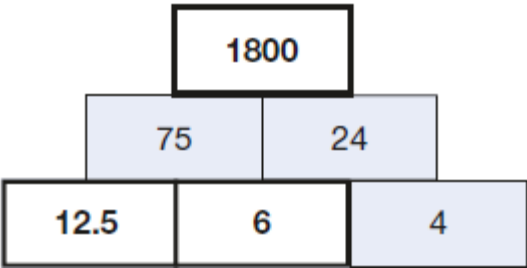
*Working must be carried through to reach an answer for the award of **ONE** mark.*

Up to 2

[2]

10

Gives the three correct numbers in their correct positions, ie:



Accept unambiguous indication
Accept equivalent fractions and decimals, eg:
 • accept $12\frac{3}{6}$ for 12.5

2

or

Gives two correct numbers in their correct positions

1

[2]

11

Award **TWO** marks for the correct answer of 24 180.

If the answer is incorrect, award **ONE** mark for evidence of appropriate working which contains no more than **ONE** arithmetical error, eg:

- long multiplication algorithm, eg

$$\begin{array}{r}
 465 \\
 \times 52 \\
 \hline
 23250 \\
 930 \\
 \hline
 \text{wrong answer}
 \end{array}$$

- grid method, eg

| | | | |
|----|-------|------|-----|
| | 400 | 60 | 5 |
| 50 | 20000 | 3000 | 250 |
| 2 | 800 | 120 | 10 |

- partitioning method, eg

$$465 \times 10 = 4650$$

$$465 \times 20 = 9300$$

$$465 \times 20 = 9300$$

$$465 \times 2 = \underline{930}$$

wrong answer

*In all cases accept follow-through of **ONE** error in working.*

Do not award any marks if:

- the error is in the place value, eg the omission of the zero when multiplying by tens, eg

$$\begin{array}{r} 465 \\ \times 52 \\ \hline 2325 \\ \underline{930} \end{array}$$

wrong answer

- the final (answer) line of digits is missing.

Variations on algorithms are acceptable, provided they represent viable and complete methods.

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

Up to 2m

[2]

12

$$\boxed{7} \times \boxed{8} \times \boxed{9}$$

Numbers may be given in any order.

U1

[1]

13

$$\boxed{1} \boxed{1} \times \boxed{1} \boxed{6}$$

Numbers may be given in either order.

[1]

14

(a) 7

Accept 7 r 55p.

Do not accept 7 r 55

1

(b) Award **TWO** marks for the correct answer of £4.11

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

$4 \times 3.79 = 15.16$

$8.95 + 15.16 = 24.11$

$24.11 - 20$

Accept for **ONE** mark £411 **OR** £411p as evidence of appropriate method.

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

Up to 2

[3]

15

271.8

[1]

16

340

[1]

17

(a) £14.40

Do not accept £14.4

1

(b) 20

Do not accept £20

1

[2]

18

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 2 | × | 3 | 2 | = | 1 | 0 | 2 | 4 |
|---|---|---|---|---|---|---|---|---|---|

U1

Accept 32

[1]

19Award **TWO** marks for the correct answer of 384If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

$$7 + 5 + 4 = 16$$

$$16 \times 24$$

OR

$$7 \times 24$$

$$5 \times 24$$

$$+ 4 \times 24$$

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

Up to 2

[2]**20**

$$\boxed{3} \boxed{2} \times \boxed{4}$$

U1

[1]**21**

18 456

[1]**22**

Calculation completed correctly as shown:

$$\boxed{6} \boxed{3} \times \boxed{6} = \boxed{3} \boxed{7} \boxed{8}$$

OR

$$\boxed{5} \boxed{4} \times \boxed{7} = \boxed{3} \boxed{7} \boxed{8}$$

OR

$$\boxed{4} \boxed{2} \times \boxed{9} = \boxed{3} \boxed{7} \boxed{8}$$

[1]

23Award **TWO** marks for the correct answer of 1504If the answer is incorrect, award **ONE** mark for evidence of appropriate working which contains no more than **ONE** arithmetical error, eg

- Standard column algorithms, eg

$$\begin{array}{r} 47 \\ \times 32 \\ \hline 94 \\ 1410 \\ \hline \end{array}$$

wrong answer

OR

- Partitioning methods, eg
 $32 \times 40 = 1280$
 $32 \times 7 = 224$
 $1280 + 224 = \text{wrong answer}$

OR

- Grid methods, eg

| | | |
|----|------|-----|
| | 40 | 7 |
| 30 | 1200 | 210 |
| 2 | 80 | 14 |

$$1200 + 210 + 80 + 14 = \text{wrong answer}$$

*In all cases accept follow through of **ONE** error in working.*

Do not award marks if:

- the error is in the **place value**, for example the omission of the zero when multiplying by the 3 tens;
- the final (answer) line of digits is missing.

Variations on algorithms are acceptable, provided they represent viable and complete methods.

*An answer must be given for the award of **ONE** mark.*

Up to 2

[2]

Examples of responses

Alice has used a conventional algorithm to find the answer. She made one error in calculating 30 multiplied by 40. However, her method is complete and correct since her error is not in her understanding of the place value, as her working shows, and she had made only one arithmetic error overall. Alice can be awarded the mark. Samantha's working, however, shows errors in the place value since she has omitted the zero when multiplying 40 by 30 and written a zero in the units column when multiplying 7 by 2. Her method is complete but not correct. Samantha cannot be awarded the mark.

Alice

Handwritten work for Alice showing a grid method and a conventional algorithm. The grid shows 47 by 32 with products 14, 80, 210, and 700. The conventional algorithm shows 47 x 32 = 1004.

1 mark

Samantha

Handwritten work for Samantha showing a conventional algorithm. The work shows 47 x 32 = 1081.

0 marks

Callum and Shula have both used grid methods to show their workings. Callum's working clearly shows his understanding of place value and his ability to interpret the numbers in the grid. Although he made an error in totalling the four numbers to find his answer, his method is complete and correct. Callum can be awarded the mark. Shula's working is similar but she has made place value errors on her grid, as she has omitted the zero from 30 and 40 on the axes. Her method is complete but not correct. Shula cannot be awarded the mark.

Callum

Handwritten grid method for Callum showing 47 by 32 with products 1200, 210, 80, and 14. The total is 1404.

1 mark

Shula

Handwritten grid method for Shula showing 47 by 32 with products 21, 14, 12, and 8. The total is 55.

0 marks

Parveen has chosen to partition the numbers to assist with the multiplication. Although she made an error in the final addition, her method is complete and correct with only one arithmetic error overall. Parveen can be awarded the mark. Steve too has used partitioning but has only partially applied the method he has chosen to use. He has failed to recognise that he also needs to add the totals of 30 multiplied by 7 and 2 multiplied by 40 to 1214 to obtain the correct answer. His method is not complete or correct. Steve cannot be awarded the mark.

Parveen

Steve

$$\begin{array}{l}
 47 \times 30 = 1410 \\
 47 \times 2 = 94 \\
 1410 + 94 = 1404
 \end{array}$$

1404

$$\begin{array}{l}
 40 \times 30 = 1200 \\
 7 \times 2 = 14 \\
 \hline
 1214
 \end{array}$$

1214

1 mark

0 marks

24

- (a) Award **TWO** marks for the correct answer of £21.80

*Accept £21.80p **OR** £21 80*

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

$$3.50 \times 4 = 14.00$$

$$1.95 \times 4 = 7.80$$

$$14.00 + 7.80 = \text{wrong answer}$$

*Accept for **ONE** mark £2180p **OR** £2180 **OR** £21.8 as evidence of appropriate working.*

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

Up to 2

(b) An explanation which recognises that each square slab costs more than half a rectangular slab or equivalent, eg

- 'Half of £3.50 is £1.75, which is less than £1.95';
- 'Two square slabs cost more than one rectangular slab';
- 'Because 12 squares cost £23.40';
- 'Because it would cost £1.60 more'.

Do not accept vague or arbitrary explanations, eg

- 'Because he would need more slabs';
- 'Because square slabs are cheaper than rectangular slabs';
- 'Because it costs more';
- 'He is right because the square slabs are £1.95 each and the rectangular slabs are £3.50 each'.

1

[3]

25

$$\begin{array}{r}
 \boxed{3} \ 4 \ \boxed{2} \\
 \times \qquad \qquad 6 \\
 \hline
 2 \ 0 \ 5 \ 2
 \end{array}$$

(a) 3 in left hand box

1

(b) 2 in right hand box

1

[2]

26

5600

[1]

27

£56

Accept also £56 00 (with clear space between 6 and 0) or £56.00p.

[1]

28

Award **TWO** marks for the correct answer of 288

If the answer is incorrect, award **ONE** mark for an appropriate calculation such as

12 × 24 = incorrect answer.

up to 2

[2]

29

Any set of four digits which make the calculation correct, eg:

$$\boxed{3} \boxed{5} \boxed{0} \div 10 = \boxed{3} \boxed{5}$$

Accept $300 \div 10 = 30$

All four digits must be given.

Do not accept

$$\boxed{} \boxed{3} \boxed{0} \div 10 = \boxed{3} \boxed{}$$

[1]

30

$$\frac{1}{32}$$

Accept equivalent fractions or the **exact** decimal equivalent, e.g. 0.03125.

Do not accept rounded or truncated decimals.

[1]

31

12

Commentary: Pupils are expected to use their knowledge of the order of operations to carry out calculations involving the four operations (6C9) in this case to evaluate 4×2 first and then to subtract that product from 20.

[1]

32

26

[1]

33

0.9

[1]

34

For 2 marks:

39 366

For 1 mark:

$$\begin{array}{r}
 729 \\
 \times 54 \\
 \hline
 2916 \\
 36450 \\
 \hline
 39366
 \end{array}$$

An error in one row, then added correctly,
or an error in the addition

Up to 2

[2]

35

460

[1]

36

6585

[1]

37 206.1 [1]

38 1914 [1]

39 For 2 marks:

13 348

For 1 mark:

$$\begin{array}{r} 284 \\ \times 47 \\ \hline 1988 \\ 11360 \\ \hline 13\ 348 \end{array}$$

*An error in one row, then added correctly,
or an error in the addition*

Up to 2

40 174.5 [2]

41 360 [1]

42 15 295 [1]

43 503.6 [1]

44 14 [1]

45 6 [1]

46 For 2 marks:

4536

For 1 mark:

$$\begin{array}{r} 72 \\ \times 63 \\ \hline 216 \\ 4320 \\ \hline 4536 \end{array}$$

*An error in one row, then added correctly,
or an error in the addition*

Up to 2

[2]

47 107.4

[1]

48 50.14

[1]

49 For 2 marks:

22 968

For 1 mark:

$$\begin{array}{r} 319 \\ \times 72 \\ \hline 638 \\ 22330 \\ \hline 22968 \end{array}$$

*An error in one row, then added correctly,
or an error in the addition*

Up to 2

[2]

50 53.34

[1]

51 0.21

[1]

52 4590

[1]

53 17 280

[1]

54 496.2

[1]

55

90.3

[1]

56

1078

[1]