Edexcel GCSE

Mathematics

Foundation/Higher Tier

Number: Decimals

Information for students

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 51 questions in this selection.

Advice for students

Show all stages in any calculations.
Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

Information for teachers

The questions in this document are taken from the 2009 GCSE Exam Wizard and include questions from examinations set between January 2003 and June 2009 from specifications 1387, 1388, 2540, 2544, 1380 and 2381.

Questions are those tagged as assessing "Decimals" though they might assess other areas of the specification as well. Questions are those tagged as "Foundation/Higher" so could have (though not necessarily) appeared on either a Foundation, Intermediate or Higher tier paper.

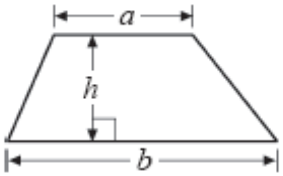
GCSE Mathematics

Formulae: Foundation Tier

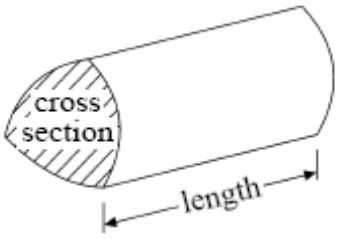
You must not write on this formulae page.

Anything you write on this formulae page will gain NO credit.

Area of trapezium = $(a + b)h$



Volume of prism = area of cross section × length



1. (a) Use your calculator to work out $\frac{\sqrt{19.2+2.6^2}}{2.7\times1.5}$

Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 3 significant figures.

.....

(1)

(Total 3 marks)

2. Use your calculator to work out $\frac{4.7}{9.4-3.5}$

Write down all the figures on your calculator display.

.....

(Total 2 marks)

3. Jamie goes on holiday to Florida.
The exchange rate is £1 = 1.70 dollars.

He changes £900 into dollars.

(a) How many dollars should he get?

..... dollars

(2)

After his holiday Jamie changes 160 dollars back into pounds.
The exchange rate is still £1 = 1.70 dollars.

(b) How much money should he get?
Give your answer to the nearest penny.

£ .....

(2)
(Total 4 marks)

4. Work out 3.15×24

.....

(Total 3 marks)

5. (a) Use your calculator to work out $\frac{4.7}{9.4 - 3.5}$

Write down all the figures on your calculator display.

.....

(2)

(b) Write these numbers in order of size.
Start with the smallest number.

$0.82 \quad \frac{4}{5} \quad 85\% \quad \frac{2}{3} \quad \frac{7}{8}$

.....

(2)

(Total 4 marks)

6. (a) Work out £3.75 × 24

£ .....

(3)

(b) Divide £135 by 20

£ .....

(3)

(Total 6 marks)

7. The cost of 1.5 kg of peaches is £0.84

The total cost of 3 kg of peaches and 2 kg of apples is £2.34

Work out the cost of 1 kg of apples.

……...

(Total 3 marks)

8. Plain tiles cost 28p each.
Patterned tiles cost £9.51 each.

Julie buys 450 plain tiles and 15 patterned tiles.

(a) Work out the total cost of the tiles.

£ ……...

(3)

(b) Express 15 as a fraction of 450
Give your answer in its simplest form.

……...

(2)

Fred lays the tiles.
He charges £360 plus VAT at 17.5%.

(c) Work out the total amount that Fred charges.

£ ……...

(3)
(Total 8marks)

9. Use your calculator to work out the value of $\sqrt{20.25}+1.65^2$

(a) Write down all the figures on your calculator display.

……...

(2)

(b) Write your answer to part (a) correct to one significant figure.

……...

(1)
(Total 3 marks)

10. (a) Write these fractions in order of size.
Start with the smallest fraction.

$\frac{3}{4}$ $\frac{5}{6}$ $\frac{2}{3}$ $\frac{7}{12}$

.....

(2)

(b) Work out $\frac{3}{4}+\frac{1}{6}$

.....

(2)

(c) (i) Which of these fractions can be written as a recurring decimal?

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{1}{5}$

.....

(ii) Explain your answer.

.....

.....

(2)
(Total 6 marks)

11. Use your calculator to work out the value of $\sqrt{20.25} + 1.65^2$

(a) Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 1 decimal place.

.....

(1)

(Total 3 marks)

12. (a) Work out $2\frac{3}{4}+3\frac{2}{3}$

Give your answer as a fraction in its simplest form.

.....

(3)

(b) (i) Which of these fractions can be written as a recurring decimal?

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{1}{5}$

.....

(ii) Explain your answer.

.....
.

.....
.

.....
.

(2)
(Total 5 marks)

13. Using the information that

$$4.8 \times 34 = 163.2$$

write down the value of

(a) 48×34

.....

(1)

(b) 4.8×3.4

.....

(1)

(c) $163.2 \div 48$

.....

(1)

(Total 3 marks)

14. Work out an estimate for $\frac{302 \times 9.96}{0.51}$

.....

(Total 3 marks)

15.

Eiffel Tower

The table shows the cost of two different models of the Eiffel Tower.

Small	£2.40
Large	£4.50

Pierre buys

10 Small models,
and 5 Large models.

He pays with a £50 note.

(a) Work out how much change he should get.

£ .....

(3)

A different model of the Eiffel Tower is made to a scale of 2 millimetres to 1 metre.

The width of the base of the real Eiffel Tower is 125 metres.

(b) Work out the width of the base of the model.
Give your answer in millimetres.

..... mm

(2)

The height of the model is 648 millimetres.

(c) Work out the height of the real Eiffel Tower.
Give your answer in metres.

..... m

(2)

(Total 7 marks)

16. Use your calculator to work out

$$\frac{22.4 \times 14.5}{8.5 \times 3.2}$$

Write down all the figures on your calculator display.

.....

(Total 2 marks)

17. Jack invests £3000 for 2 years at 4% per annum compound interest.

Work out the value of the investment at the end of 2 years.

£ .....

(Total 3 marks)

18. Use the information that

$$322 \times 48 = 15\,456$$

to find the value of

(a) 3.22×4.8

.....

(1)

(b) 0.322×0.48

.....

(1)

(c) $15\,456 \div 4.8$

.....

(1)

(Total 3 marks)

19. Tania went to Italy.
She changed £325 into euros (€).

The exchange rate was £1 = €1.68

(a) Change £325 into euros (€).

€ .....

(2)

When she came home she changed €117 into pounds.

The new exchange rate was £1 = €1.50

(b) Change €117 into pounds.

£ .....

(2)

(Total 4 marks)

20. (a) Work out $\dfrac{4.6+3.85}{3.2^2-6.51}$

Write down all the numbers on your calculator display.

.....

(2)

(b) Give your answer to part (a) correct to 1 significant figure.

.....

(1)

(Total 3 marks)

21. Alex has a mobile phone.
Each month he pays

13.4p for each minute he uses his mobile phone
and
a fixed charge of £18.75

In January Alex uses his mobile phone for 405 minutes.

Work out the **total amount** Alex pays.

£ .....

(Total 3 marks)

22. $\frac{1}{3}$ $\frac{2}{5}$ $\frac{5}{8}$ $\frac{6}{10}$ $\frac{7}{12}$ $\frac{9}{15}$

Maria correctly converted each of these fractions to decimals.

Put a ring around each fraction which gave a recurring decimal.

(Total 2 marks)

23. Work out 25.6×1.6
You **must** show **all** your working.

.....

(Total 3 marks)

24. Here is part of Mrs Cook's gas bill.

Gas Bill

New reading 6549 units

Old reading 5137 units

Cost per unit 52p

Work out the **total** cost of the units of gas she used.

£ .....

(Total 4 marks)

25. Adult cinema tickets cost £3.50.
Child cinema tickets cost £2.20.
Mr Brown buys some cinema tickets for £14.90.
He buys 2 child cinema tickets.

How many adult cinema tickets does he buy?

1	2	3	4	5
☐	☐	☐	☐	☐
A	**B**	**C**	**D**	**E**

(Total 1 mark)

26. Work out 1572 ÷ 0.3

5.24	52.4	524	5240	52400
☐	☐	☐	☐	☐
A	**B**	**C**	**D**	**E**

(Total 1 mark)

27. Given that

$67 \times 329 = 22043$,

What is 0.67×32.9?

2.2043	22.043	220.43	2204.3	22043
☐	☐	☐	☐	☐
A	**B**	**C**	**D**	**E**

(Total 1 mark)

28. Which fraction is the largest?

$\frac{11}{15}$	$\frac{4}{5}$	$\frac{9}{10}$	$\frac{13}{20}$	$\frac{53}{60}$
A	**B5**	**C**	**D**	**E**

(Total 1 mark)

29. 487 is divided by 23

What is the remainder?

16	4	3	6	0
A	**B**	**C**	**D**	**E**

(Total 1 mark)

30. The diagram shows a rectangular floor.
The length of the floor is 3 m.
The width of the floor is 2 m.

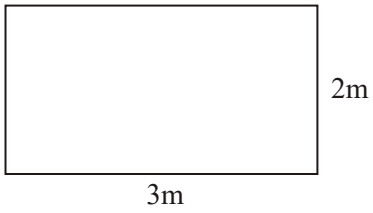


Diagram **NOT** accurately drawn

Jane is going to cover the floor with tiles.
Each tile is a square of side 50 cm.
Jane wants to cover the floor completely.

How many tiles does she need?

24	12	10	20	6
A	**B**	**C**	**D**	**E**

(Total 1 mark)

31. Given that $37 \times 234 = 8658$

what is the value of 3.7×23.4 ?

865.8	86.58	8.658	0.8658	86580
A	**B**	**C**	**D**	**E**

(Total 1 mark)

32. Which is the best estimate for the value of $\frac{410 \times 6.9}{0.23}$?

14000	7000	1230	1400	2800
A	**B**	**C**	**D**	**E**

(Total 1 mark)

33. Use your calculator to work out the exact value of $\frac{15.6}{1.18 + 2.07}$

.....

(Total 2 marks)

34. A train ticket to the city centre costs £2.85
A teacher buys 26 of these tickets for a school group.
What is the total cost of the 26 tickets?

£74.10	£22.80	£64.10	£51.40	£71.25
A	**B**	**C**	**D**	**E**

(Total 1 mark)

35. (a) Use your calculator to work out

$$(3.4 + 2.1)^2 \times 5.7$$

Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 1 significant figure.

.....

(1)

(Total 3 marks)

36. (a) Use your calculator to work out

$$\frac{1000}{7.3^2 - 16.3}$$

Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 1 decimal place.

.....

(1)
(Total 3 marks)

37. Given that $48.6 \times 35 = 1701$

write down the value of

(a) 4.86×3.5

.....

(1)

(b) $17.01 \div 35$

.....

(1)
(Total 2 marks)

38. (a) Write 24 as a fraction of 36
Give your answer in its simplest form.

.....

(2)

(b) Change $\frac{3}{5}$ into a decimal.

.....

(2)
(Total 4 marks)

39. Work out 5.4 × 0.24
You **must** show **all** your working.

.....

(Total 3 marks)

40. (a) Use your calculator to work out the value of $2.58 \times \sqrt{2}$

Write down all the figures on your calculator display.

.....

(1)

(b) Write your answer to part (a) correct to 1 decimal place.

.....

(1)
(Total 2 marks)

41. Given that $32 \times 14 = 448$

write down the value of

(a) 32×1.4

.....

(1)

(b) 0.32×14

.....

(1)

(c) $448 \div 320$

.....

(1)
(Total 3 marks)

42. Esther went to France.

She changed £300 into Euros (€).
The exchange rate was £1 = €1.25

(a) How many Euros did she get?

€ .....

(2)

Esther went shopping in France.
She bought

2 necklaces for €2.60 **each**
1 hat for €6.40
1 bag for €9.80

The exchange rate was £1 = €1.25

(b) Work out her **total** bill in pounds (£).

£ .....

(4)
(Total 6 marks)

43. What is $\frac{1}{8}$ when written as a decimal?

0.18	0.1	0.12	1.8	0.125
A	**B**	**C**	**D**	**E**

(Total 1 mark)

44. Given that $4.5 \times 5.5 = 24.75$

What is the value of 0.45×550?

0.2475	2.475	24.75	247.5	2475
A	**B**	**C**	**D**	**E**

(Total 1 mark)

45. Use your calculator to work out

$$\sqrt{12.63 + 18^2}$$

Write down all the figures on your calculator display.

.....

(Total 2 marks)

46. Mrs Moger took a group of children to the theatre.

Adult Ticket	**£13.2**
Child Ticket	**£8.3**

The total cost of **one** adult ticket and **all** the child tickets was £146

Work out the number of children Mrs Moger took to the theatre.

..... children

(Total 3 marks)

47. Given that $47 \times 81.6 = 3835.2$

What is the value of 0.47×816?

383.52	38 352	38.352	3835.2	3.8352
A	**B**	**C**	**D**	**E**

(Total 1 mark)

48. Which is the best estimate for the value of $\frac{38.3 \times 51.7}{2.1}$?

750	2000	1000	1500	100
A	**B**	**C**	**D**	**E**

(Total 1 mark)

49. (a) Use your calculator to work out $\frac{26.4 + 8.2}{\sqrt{5.76}}$ as a decimal.

Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 2 decimal places.

.....

(1)

(Total 3 marks)

50. $0.64 \div 0.2 =$

3.2	0.032	0.32	12.8	1.28
A	**B**	**C**	**D**	**E**

(Total 1 mark)

51. Work out $\frac{3.4^2 - 2.6^2}{1.6}$

.....

(Total 2 marks)

1. (a) $\frac{\sqrt{25.96}}{4.05} = \frac{5.09509...}{4.05}$ 2

1.258048316

M1 for 5.09... or 4.05 or 25.96 seen
A1 for at least 4 sf rounded or truncated:
1.258(048316...) or 1.26

(b) 1.26 1

B1 for 1.26 or ft from (a); 1.260 gets B0

[3]

2. 4.7 ÷ 5.9 = 0.796610169
= 0.7966.. 2

B2 for 0.7966 or better
(B1 for 0.8, 0.80, 0.79, 0.796, 0.797 or digits 59 seen

[2]

3. (a) 900 × 1.70 =1530 2

M1 900 × 1.7(0) or digits 153(0) seen
A1 cao

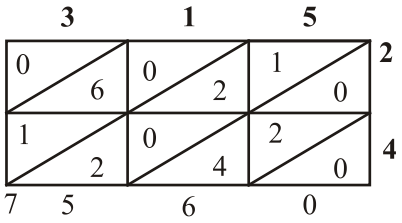
(b) 160 ÷ 1.70 =
£94.12 or
£94.11 2

M1 160 ÷ 1.7(0) or digits 941(....) seen
A1 cao

[4]

4.

315	24
24	315
1260	120
6300	240
7560	7200
	7560



300	**10**	**5**	
6000	200	100	**20**
1200	40	20	**4**

6000 + 200 + 100 + 1200 + 40 + 20 = 7560

3	**0.1**	**0.05**	
60	2	1	**20**
12	0.4	0.2	**4**

60 + 2 + 1 + 12 + 0.4 + 0.2 = 75.6

= 75.6(0) 3

M1 for a complete method with relative place value correct. Condone 1 multiplication error, addition not necessary.

or

M1 for a complete grid with not more than 1 multiplication error, addition not necessary.

or

M1 for sight of a complete partitioning method, condone 1 multiplication error, final addition not necessary.

A1 for 7560 or digits 756(0)

A1 (dep on M1, but not previous A1) for correct placement of decimal point.

[3]

5. (a) $4.7 \div 5.9 = 0.796610169$
$= 0.7966..$ 2

B2 for 0.7966 or better

(B1 for 0.8, 0.80, 0.79, 0.796, 0.797 or digits 59 seen)

(b) 0.82, 0.8, 0.85, 0.66, 0.875
0.66, 0.8, 0.82, 0.85, 0.875
2/3, 4/5, 0.82, 85%, 7/8
2/3, 4/5, 0.82, 85%, 7/8 2

B2 correct order (oe decimals in order)

(B1 correct order reversed, or one error in ordered listing) with or without decimal equivalents.

NB Accept 0.67 or 0.66

[4]

6. (a)

$$\begin{array}{r} 375 \\ 24 \times \\ \hline 1500 \\ 7500 \\ \hline 9000 \end{array}$$

$= 90.00$ 3

	3	**7**	**5**	
	6	1 4	1 0	**2**
9	1 2	2 8	2 0	**4**
	0	0	0	

300	70	5	
6000	1400	100	20
1200	280	20	4

6000 + 1400 + 100 + 1200 + 280 + 20 = 9000

M1 for a complete method with relative place value correct, condone 1 multiplication error, addition not necessary

A1 for 9000

A1 (dep on M1) for correct conversion of their total into £s

or

M1 for a completed grid with not more than 1 multiplicationerror, addition not necessary

A1 for 9000

A1 (dep on M1) for correct conversion of their total into £s

or

M1 for sight of a complete partitioning method, condone 1 multiplication error, final addition not necessary

A1 for 9000

A1 (dep on M1) for correct conversion of their total into £s

or

M1 for repeated addition (condone 23 or 25) must be an attempt to add

A1 for 9000

A1 (dep on M1) for correct conversion of their total into £s

(b) $20\overline{)135.5^{15}0^{10}0}$ 3

$= 6.75$

M1 for 135 ÷ 20 with 6 units identified
M1 for a correct method to deal with remainder
A1 cao
or
M1 for complete method for division broken up correctly
M1 for a correct method to deal with remainders
A1 cao

[6]

7. 3kg peaches is £1.68
£2.34 – £1.68 = £0.66
£0.66 ÷ 2 = £0.33

= £0.33 or 33p 3

M1 2 × £0.84 or digits 168 seen
M1(dep) digits 234 – digits "168" or digits 66 seen
A1 £0.33 or 33p (units consistent with answer)
NB: 0.33 or 33 without units M2, £0.33p, £33p M2A1

[3]

8. (a) $450 \times 28 = 12600\text{p} = £126$
$15 \times 9.51 = £142.65$
$£142.65 + £126$
$= 268.65$ 3

M1 for 450 × 28 or 0.28x450 or digits 126 seen
M1 for 15 × 9.51 or 951 × 15 or digits14265 seen
A1 cao

(b) $\frac{15}{450} = \frac{1}{30}$

$\frac{1}{30}$ 2

M1 for $\frac{15}{450}$
A1 for $\frac{1}{30}$
SC B1 for 0.03(……..) or 3.33(……..)%

(c) 360×1.175 or
$360 \times \frac{17.5}{100} = 63$
$360 + 63$
$= £423$ 3

M2 for 360 × 1.175 oe
A1 cao
or
M1 for $360 \times \frac{17.5}{100}$ *(= 63)*
or attempt at 10%, +5%, +2.5% eg digits 36 + 18 + 9
M1 (dep) 350 + "63"
A1 cao

[8]

9. (a) $4.5 + 2.7225 = 7.2225$ 2

M1 for 4.5 or 2.7225
A1 7.2225 cao

(b) 7 1

B1 ft to 1 sf on (a)

[3]

10. (a) $\frac{3}{4} = \frac{9}{12}, \frac{5}{6} = \frac{10}{12},$

$\frac{2}{3} = \frac{8}{12}, \frac{7}{12} = \frac{7}{12}$

$= \frac{7}{12}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$ 2

M1 for attempting to use a common denominator or attempting
to convert fractions to decimals, rounded or truncated to 1 dp
A1 for correct order
Special case: B2 for fully correct order
(B1 for 3 correctly ordered fractions or largest first and in order)

(b) $\frac{9}{12} + \frac{2}{12} = \frac{11}{12}$

$= \frac{11}{12}$ 2

M1 for using a suitable common denominator, at least one of
two fractions correct
A1 for $\frac{11}{12}$ *oe*
or
Attempt to use decimals, must use at least 2dp
M1 for 0.75 + 0.16 (or 0.17)
A1 for 0.916 (recurring)

(c) (i) $\frac{1}{2} = 0.5, \frac{1}{3} 0.\dot{3}, \frac{1}{4} = 0.25,$

(ii) $\frac{1}{5} = 0.2$

$= \frac{1}{3}$ 2

B1 for 1/3 or equivalent
B1 (dep) for valid reason e.g. it does not terminate, $\frac{1}{3} = 0.\dot{3}$*, 3 doesn't divide into 1 exactly*

[6]

11. (a) $4.5 + 2.7225 = 7.2225$ 2

M1 for 4.5 or 2.7225

A1 7.2225 cao

(b) 7.2 1

B1 for rounding correctly their 4 or more figure answer in (a)
to 1 decimal place; award if 7(a) already to 1dp

[3]

12. (a) $\frac{9}{12} + \frac{8}{12} = \frac{17}{12} = 1\frac{5}{12}$ 3

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

M1 for using a common denominator

M1 for either 9/12 or 8/12 or 33/12 or 44/12 or 17/12 oe

A1 for $\frac{77}{12}$ *or* $6\frac{5}{12}$

Alternative

M1 for converting 3/4 and 2/3 to decimals
M1 for 0.75 + 0.66 or better

A1 for $6.41\dot{6}$ *oe*

(b) $\frac{1}{2} = 0.5, \frac{1}{3} = 0.\dot{3}, \frac{1}{4} = 0.25, \frac{1}{5} = 0.2$ 2

$= \frac{1}{3}$

B1 for 1/3 oe

B1 (dep) for valid reason e.g. it does not terminate, 1/3 = 0.333(3...), 3 does not divide exactly into 1

[5]

13. (a) 1632 1

B1 for 1632 or 1632.0

(b) 16.32 1

B1 for 16.32 cao

(c) 3.4 1

B1 for 3.4 cao

[3]

14. $\frac{300\times10}{0.5}=\frac{3000}{0.5}$

5890 – 6040 3

M1 for any two of 300, 10 or 0.5

M1 for $\frac{3000}{0.5}$ *or 300 × 20 or 600 × 10 or* $\frac{3020}{0.5}$ *or 302 × 20 or 604 × 10*

A1 for 5890 – 6040

SC: B2 for answer of 1500 or 1510

[3]

15. (a) (2.40 × 10) + (4.50 × 5) = 24.00 + 22.50 = 46.50

50.00-46.50

3.50 3

M1 (2.40 × 10) or (4.50 × 5) or sight of 24 or 22.5(0)

M1 (2.40 × 10) + (4.50 × 5) or sight of 24 + 22.5(0) or sight of 46.5(0)

A1 cao Accept 3.5

(b) 125 × 2

250 2

M1 125 × 2

A1 cao

(c) 648 ÷ 2

324 2

M1 648÷2

A1 cao

[7]

16. $\frac{22.4\times14.5}{8.5\times3.2}=\frac{324.8}{27.2}$

11.94117647 2

M1 for 324.8 or 27.2 oe eg $\frac{1624}{5},\frac{136}{5}$

A1 11.941(17647...) Accept $\frac{203}{17},11\frac{16}{17}$

[2]

17. $3000 \times \frac{4}{100} + 3000 = 3120$

$3120 \times \frac{4}{100} + 3120 = 3244.80$

or $3000 \times \left(\frac{104}{100}\right)^2$

3244.80 3

M1 for 3000 × $\frac{4}{100}$ ***or*** *120* ***or*** *240* ***or*** *3240* ***or*** *3120* ***or*** *1.04 × 3000* ***or*** *2880* ***or*** *2760*

M1(dep) for (3000 + '120') × $\frac{4}{100}$ ***or*** *124.8(0)* ***or*** *"3120" × 1.04*

A1 £3244.8(0)

OR

M2 3000 × $\left(\frac{104}{100}\right)^2$ ***or*** *3000 × $\left(\frac{104}{100}\right)^2$*

A1 £3244.8(0)

NB : If correct answer seen then ignore subsequent years

[3]

18. (a) 15.456 1

B1 cao

(b) 0.15456 1

B1 cao

(c) 3220 1

B1 cao

[3]

19. (a) 325 × 1.68
546 2

M1 for 325 × 1.68 seen or digits 546
A1 for 546, accept 546.00, 546.0

(b) 117 ÷1.5
78 2

M1 for 117 ÷1.5 seen or digits 78
A1 for 78, accept 78.00, 78.0

[4]

20. (a) $4.6 + 3.85 = 8.45$
$3.2^2 - 6.51 = 3.73$
$8.45 \div 3.73 =$
2.26541555 2

M1 for $\frac{169}{20}$ *or* $\frac{256}{25}$ *or* $\frac{373}{100}$ *or 3.73 or 10.24 or 8.45 seen*
A1 for 2.265(41555); accept $\frac{845}{373}$

(b) 2 1

B1 ft for 2 or follow through their answer to part (a)
NB: 2.0 gets B0

[3]

21. £73.02 3

405 × 13.4 (= 5427)
"54.27" + 18.75

M1 for 405 × 13.4 or digits 5427 seen
M1(dep) for "54.27" + 18.75 (must be in same units)
A1 cao

[3]

22. $\frac{1}{3}, \frac{7}{12}$ 2

B2 for both fractions
(B1 for one correct fraction)
−1 for each incorrect answer over 2

[2]

23. 3

	256		
50	6		
×	16		
500	60		
	15 36		
300	36		
	25 60		
	40 90		

		200
	10	2000
	6	1200

2000, 1200, 500, 300, 60, 36 added
= 40.96

M1 for complete method for multiplying the digits 256 by 16, condone one arithmetic error
A1 for digits 4096 seen
A1 cao

[3]

24. 6549 – 5137 (= 1412) 4
"1412" × 52 (= 73424)
"73424" ÷ 100
= 734.24

M1 for 6549 – 5137 or 1412 seen
M1 (dep) for "1412" × 52 or 73424 seen
M1 for "73424" ÷ 100 (this depends upon "73424" being the result of a direct product of 52 and units given in the question)
A1 cao

Alternative

6549 × 52 (= 340548)
5137 × 52 (= 267124)
"340548" ÷ 100 – "267124" ÷ 100

Alternative
M1 for 6549 × 52 or 340548 seen or 5137 × 52 or 267124 seen
M1 for "340548" ÷ 100 or "267124" ÷ 100 (this depends upon "340548" or "267124" being the result of a direct product of 52 and units given in the question)
M1 (dep on 1st M1) for "340548" – "267124" or "340548 ÷ 100" – "267124 ÷ 100"
A1 cao

As we have all seen, the concept of bills involving meter readings is totally foreign to many candidates. Very many are finding the sum of the units and then finding the cost of the total.
The new alternative method goes some way to address this issue.
Essentially the 3 method marks can be classified as follows:

*M1 for multiplying by 52; **either,** the number of either of the units given, or the **difference** of the units given or the **sum** of the units given. No other product gains this mark.*

M1 for a correct method to convert any of the answers derived from the method above into pounds. Often this is seen combined with the method above by a product including 0.52 This method mark is dependent upon the award of the previous M1.

M1 for working out the difference between the reading/cost from "new" to "old"

Candidates following the sum of the two readings/costs can only get a maximum of 2 marks (the first 2 method marks)
Sight of the digits 607672 with or without working, gets M1
Sight of 6076.72 with or without working, gets M2 (I know that these imply a multi-stage operation, but the numbers couldn't have come from anywhere else)

Similarly, sight of just 1412 or 340548 or 267124 gets 1 mark
sight of just 73424 or 3405.48 or 2671.24 gets 2 marks
(Note: sight of just 14.12 gets M1 only)
sight of 734.24 gets the full 4 marks unless contradicted by another answer on the answer line.

[4]

25. C

[1]

26. D

[1]

27. B

[1]

28. C

[1]

29. B

[1]

30. A

[1]

31. B

[1]

32. A

[1]

33. $\frac{15.6}{3.25}$

4.8 or $\frac{24}{5}$ 2

B2 for 4.8 or $\frac{24}{5}$ or $4\frac{4}{5}$ only

[B1 for 3.25 oe seen or any equivalent fraction to $\frac{24}{5}$ written as an improper or mixed fraction]

[2]

34. A

[1]

35. (a) $(3.4 + 2.1)^2 \times 5.7$

$= 5.5^2 \times 5.7$

$= 30.25 \times 5.7$

172.425 2

M1 for 5.5 or 30.25 or $\frac{121}{4}$ or 172. (...) seen

A1 for 172.425 or $\frac{6897}{40}$

(b) 200 1

B1 ft

[3]

36. (a) 27.034…… 2

B2 for 27.034(3336)
(B1 for 53.29 or 36.99 seen)

(b) 27.0 1

B1 ft
[Note: An answer of 27 or 27.00 only is not acceptable]

[3]

37. (a) 17.01 1

B1 cao

(b) 0.486 1

B1 cao

[2]

38. (a) $\frac{24}{36}$ 2

$\frac{2}{3}$

B2 for 2/3 cao
(B1 for sight of 24/36 or 12/18 or 8/12 or 4/6 or 6/9)
SC : B1 for 2 : 3

(b) $\frac{0.6}{5\overline{)3.0}}$ 2

0.6

M1 for 3 ÷ 5 oe or $\frac{6}{10}$ *oe seen or o.2 × 3*
A1 for 0.6(0)

[4]

39.

540	
24	
2160	
10800	
12960	

3

129.6(0)

M1 for a complete method with relative place value correct. Condone 1 multiplication error, addition not necessary.

OR

M1 for a complete grid. Condone 1 multiplication error, addition not necessary.

OR

M1 for sight of a complete partitioning method, condone 1 multiplication error. Final addition not necessary.

	5	**4**	**0**	
1	1 0	8	0	**2**
2	2 0	1 6	0	**4**
	9	6	0	

	500	**40**	**0**
20	10000	800	0
4	2000	160	0

A1 for 129.6(0) cao

A1 (dep on M1, but not previous A1) for correct placement of decimal point.

10000 + 2000 + 800 160 = 12960

3	**0.1**	**0.05**	
60	2	1	**20**
12	0.4	0.2	**4**

100 + 20 + 8 + 1.6 = 129.6

[3]

40. (a) $2.58 \times \sqrt{2} =$
3.648670991 1
B1 for 3.648... cao

(b) 3.6 1
B1 ft for "3.6"

[2]

41. (a) 44.8 1
B1 for 44.8 cao

(b) 4.48 1
B1 for 4.48 cao

(c) 1.4 1
B1 for 1.4 cao

[3]

42. (a) 300×1.25 2
375
M1 for 300 × 1.25
A1 cao

(b) $2 \times 2.60 + 6.40 + 9.80 \ (= 21.4)$ 4
"21.4"÷1.25
£17.12
M2 for 2 × 2.60 + 6.40 + 9.80 (= 21.4)
(M1 for 2.60 + 6.40 + 9.80 (= 18.8))
M1 for "total"÷1.25
A1 cao

OR
M1 for any value ÷ 1.25 (implied by at least one figure below)
M2 for "4.16" + "5.12" + "7.84"
(M1 for "2.08" + "5.12" + "7.84" (= 15.04))
A1 cao
SC: B1 for 18.8 , B2 for 15.04

[6]

43. E

[1]

44. D

[1]

45. $= \sqrt{336.63}$
18.347….

2

B2 for 18.347(47939) or $\frac{7\sqrt{687}}{10}$

(B1 for 18.3… or 336.63 seen)

[2]

46. 146 – 13.20 = 132.80
132.80 ÷ 8.30
16

3

M1 for first step in a valid method eg 146 – 13.20 or sight of 132.8(0)
M1 for "132.80" ÷ 8.3
A1 cao
Alternative 1 (repeated addition)
M1 for repeated addition of 8.30 (at least twice)
M1 for 13.20 + repeated addition of 8.30 (at least 15 times)
A1 cao
Alternative 2 (repeated subtraction)
M1 for repeated subtraction of 8.30 (at least twice)
M1 for repeated subtraction of 8.30 (at least 15 times with answers shown)

[3]

47. A

[1]

48. C

[1]

49. (a) $\frac{26.4+8.2}{\sqrt{5.76}} = \frac{34.6}{2.4}$

14.4166(6667) 2

B2 14.4166(6667) accept $\frac{173}{12}$ *or* $14\frac{5}{12}$ *or* $14.41\dot{6}$

(B1 for 34.6 or 2.4 seen)

(b) 14.42 1

B1 ft from "14.4166…" assuming original is to 3 d.p. or more

[3]

50. A

[1]

51. $3.4^2 - 2.6^2 = 4.8$

$4.8 \div 16 = 3$ 2

M1 for 3.4 × 3.4 – 2.6 × 2.6 with evidence of multiplication or 11.56 or 6.76 or 4.8 or 289/25 or 169/25 or 24/5

A1 for 3 cao

(SC B1 for 7.335 or 1467/200)

[2]

1. Paper 5524

A significant number merely keyed in the numbers into the calculator and inevitably got the wrong answer. Only those who undertook separate calculations for numerator and denominator arrived at the correct answer. Many candidates were unable to round the answer in (a) correctly to 3 significant figures, with many choosing to round to decimal places by mistake, or truncating. Rounding is clearly a general weakness.

Paper 5526

Part (a) required the correct use of a calculator. The vast majority of candidates could sequence the calculations and achieve the correct answer. There was a worrying minority of students who did not appreciate the need to apply Bidmas (Or Bodmas) especially when it came to the evaluation of the denominator of the expression, thus the most common errors were to square root only the 19.2 and not the result of $19.2 + 2.6^2$ and to evaluate the numerator and denominator separately and thus divide by 2.7 and multiply by 1.5. Most candidates could round off correct to 3 significant figures.

2. This question tested the use of a calculator to work out a relatively simple numerical expression. It is disappointing to report that a large proportion of candidates did not appreciate the need to work out the value of the denominator first and / or use brackets appropriately when evaluating the fraction using their calculator. This resulted in the very common incorrect response of "-3". Other common incorrect answers were 10.6 (4.7 + 9.4 – 3.5), 8.2 (4.7 – 9.4 – 3.5) and 1.2…((9.4 – 3.5) ÷ 4.7). Despite the question requesting candidates to "write down all the figures on your calculator display", a significant number of candidates rounded or truncated their answer which sometimes resulted in a loss of marks.

3. Foundation Tier

Whilst many candidates realised the need to multiply 900 by 1.70 in part (a) and went on to give the correct answer, a significant number incorrectly placed the decimal point in their answer. They were awarded one out of the two marks available for this part of the question.

Part (b) was answered much less successfully than part (a), though a good proportion of candidates identified the correct operation. Despite the instruction to "give your answer to the nearest penny", many candidates recorded 94.1, 94 or 90 on the answer line without working and so lost marks unnecessarily.

This question demonstrated the disadvantage of candidates not having a calculator available to them.

Intermediate Tier

This well-answered question usually provided candidates with full marks. In part (a) the most common incorrect approach was to divide, rather than to multiply. Some failed to multiply correctly, leaving the decimals point in the wrong place.

In part (b) the most common incorrect approach was to multiply rather than divide. Some candidates appeared confused about what to do with their final answer, even though the direction in the question was clear. They appear unfamiliar with correct money notation.

4. The majority of candidates were able to calculate the long multiplication correctly, and most placed the decimal point in the correct position. A variety of methods were seen. Those who used the standard algorithm were often successful although sometimes the relative place value was incorrect. The Napier's Bones method still seems to be as successful as in the past. Here the errors tended to occur in the addition stage of the process due to the figures not being lined up correctly. Candidates using a grid method often succeeded. Again, errors were made at the addition stage but many could not deal with the decimal part of 3.15. Some used 10 and 5 in the multiplication by 20 and 4 but used 3 instead of 300. Others tried to multiply 20 and 4 by 0.15. This often led to a wrong answer. There were still many candidates who used variations of repeated addition to find the answer. These attempts were less successful as they provided numerous opportunities for errors in addition to take place.

5. Most candidates appeared to possess a calculator, and where able to perform the correct operations. In part (a) most success was demonstrated when candidates wrote down the denominator and numerator as a single number, and then performed the division. Many arrived at the final answer. Predictably the most common incorrect answer was -3, from those candidates who just entered the numbers in their calculator as given, without thinking about the order of operations: $4.7 \div 9.4 - 3.5$. In part (b) it was encouraging to see so many candidates achieving success. Most gained some credit for their efforts; many knew how to convert between fractions and decimals. Where errors were made, it was most frequently the fractions 2/3 and 7/8 that were most frequently in the wrong position.

6. **Foundation Tier**

It was very rare to see fully correct answers to this question as candidates do struggle with long multiplication and long division. They achieved more success in the multiplying rather than the dividing with counting on methods gaining some success in part (a) and dividing by 10 then 2 gaining success in (b).

Intermediate Tier

More than half of the candidates were able to work out the long multiplication correctly in part (a), often by using a grid or the Gelosia method. Many also used the standard algorithm accurately, although some made a mistake with the relative place value and wrote 750 instead of 7500. Candidates who attempted a partitioning method frequently made errors in positioning the decimal point in one or more of their parts or did not include all the necessary multiplications. Candidates were less successful in part (b). Many started the division correctly and calculated the initial value of 6 but then did not know how to deal with the remainder of 15. Very often the answer was given as 6.15. A common method to obtain the 6 was to build up to 135 in multiples of 20. Some candidates divided by 10 and then by 2 but common errors were to divide by 10 and then by 10 again or to divide by 10 and then double the result. A lot of answers in the 60s were seen, some of which resulted from candidates simply dividing by 2.

7. Foundation Tier

Correct answers were given by a good proportion of candidates, many of whom had struggled with earlier questions in the paper. However, many candidates failed to score full marks only because they did not make clear the units used in their answers. A sizeable minority of candidates simply halved £2.34 and gave £1.17 as their final answer.

Intermediate Tier

Most candidates got as far as the digits 33,but were then either unsure of their units or ignorant of the need to include them in an answer.

8. Foundation Tier

Answers seen to part (a) of this question showed that candidates usually identified the correct method but that many were thwarted by their inability to deal correctly with place value when dealing with money. As they had shown their intention to multiply the correct quantities, examiners were often able to award candidates at least two of the marks available. Significantly fewer candidates were able to answer part (b) correctly, particularly the simplification of the fraction. There were very few correct answers to part (c). Many candidates who attempted this part just added £17.50 to £360 and gave an answer of £377.50.

Intermediate Tier

The majority of candidates showed intent to multiply the correct amounts in part (a), but were not always able to convert one or the other or both to £, so losing the accuracy mark. Many candidates used long multiplication methods rather than using their calculators. In part (b) 15/450 was seen in most cases, but a significant number could not then simplify this fraction. In part (c) those candidates who relied on non-calculator methods rarely accessed any marks. A significant number either added or divided the 17.5.

9. Few candidates wrote down any intermediate steps in this “use of calculator” question and so no marks could be awarded in part (a) if the answer was incorrect. Candidates correctly writing down the square root of 20.25 (4.5) or the square of 1.65 (2.7225) were rewarded with a mark.In part (b) it was rare to see a correct rounding of their answer to part (a) of this question. Some candidates rounded to one decimal place rather than the one significant figure required.

10. Many candidates gained at least one mark in part (a) for writing three of the fractions in the correct order, often listing the fractions in ascending order of numerator and denominator. Despite the generous space for working out many candidates showed no working at all, just writing down the answer. Candidates who used a common denominator were the most successful. Those who attempted to convert the fractions into decimals were usually unsuccessful as were those who drew and shaded diagrams. In part (b) almost 30% of candidates added the two fractions correctly. Not surprisingly, the most common error was for candidates to simply add the numerators and add the denominators. Some of those who appreciated the need for a common denominator left the numerators unchanged. More than half of the candidates chose the correct fraction in part (c) but many were then unable to give an appropriate explanation. Most successful explanations resulted from attempts to convert 1/3 into a decimal or a percentage and to show that it recurs. Common errors were 1/3 = 1.333, 1/3 = 3.333 and 1/3 = 0.3. Explanations based on the properties of the denominator, 3, usually failed because 5 is also both odd and prime. It was evident that a significant number of candidates did not know the meaning of 'recurring'.

11. Many scored full marks, and then went on o round their answers correctly in part (b). Errors were made in part (a) by those who attempted the calculation in one stage on their calculators. This often resulted in $20.25 + 1.65^2 = 22.9725$ and then 4.792…

There was a problem with decimal points. Either the candidate failed to show them in their answer, or merely moved them in part (b) instead of rounding.

12. This question was done well by most of the candidates. In part (a), many candidates were able to add the mixed fractions either by converting each mixed number to a top heavy fraction or by adding the integers and fractions separately. Some candidates dealing with the fractions and integers separately did not fully simplify their answer $\frac{17}{12}$. Common incorrect answers amongst those candidates confused with the method include $5\frac{5}{7}$ and $6\frac{6}{12}$. In part (b), many candidates were able to identify $\frac{1}{3}$ as the fraction that could be written as a recurring decimal and simply state that $\frac{1}{3} = 0.\dot{3}$ or $\frac{1}{3} = 33.\dot{3}\,(\%)$. Some candidates identified $\frac{1}{3}$ by elimination. A relatively small number of candidates thought that both $\frac{1}{3}$ and $\frac{1}{5}$ could be written as recurring decimals because the denominator was an odd number. Other common incorrect answers involved describing $\frac{1}{3}$ as irrational or as a surd.

13. Foundation

Many candidates were successful in part (a). Slightly fewer gave the correct answer in part (b) and a common error was for 163.2, instead of 16.32, to be given. Part (c) was answered least well. Here, a very common incorrect answer was 34. A significant number of candidates did not use the information given at the start of the question and attempted to work out each calculation from scratch. These attempts almost invariably failed.

Higher

This question was done well by the vast majority of the candidates. A small number of candidates tried to do the various calculations rather than use the information provided, but few of these attempts resulted a correct answer. Common incorrect answers in part (c) were 34 and (more rarely) 340.

14. Foundation

Very few candidates gained full marks for this question. Many were able to round 302 and 9.96 to 300 and 10 respectively but the denominator of 0.51 was often rounded to 1 or somehow became 50. Sadly, the majority of those candidates who did get as far as 3000/0.5 were unable to evaluate this as 6000. Most chose to divide by 2 so that 1500 and 1510 were very common incorrect answers. Too many candidates failed to recognise the need to approximate and embarked on long multiplication and then division in the search for an answer.

Higher

The vast majority of candidates were able to score at least one mark in this question but less than half managed to get full marks. Common errors were to round 0.51 to 1 (leading to an answer of 3000) and to calculate 3000/0.5 as 1500 (common) or 4500. A significant number of candidates did not round 302 to 300, but were still able to gain full marks for 6040. Candidates should be advised to round all numbers to one significant figure when doing an approximation.

15. Most candidates gained full marks in part (a), though those attempting the question by non-calculator methods rarely gained the full marks due to numerical errors in their calculations. Of those using calculators a common error was to write down and use £22.05 instead of £22.50. A significant number stopped after having found the total cost and failed to find the change.

In parts (b) and (c) about half the candidates gained the marks. It was usually a choice between dividing and multiplying, with many accepting answers which were numerical incorrect given the context. Some candidates lost marks due to their confusion over the units being used.

16. Foundation

There were some good attempts at this question, with many candidates gaining full marks. A significant number of candidates worked the numbers out using the wrong order (usually getting 122.27), or put the decimal point into their answer in the wrong place. Despite the direction to "write down all the figures…" some candidates still wrote their answers rounded or truncated. Those without calculators would have found this question difficult.

Higher

Most candidates knew that they had to work out the numerator and the denominator separately or that they had to use brackets when dividing by the expression in the denominator. The vast majority of candidates gave enough figures in their answer to earn full marks for the question. The most common incorrect answer started with 122.2… and was awarded no marks if no interim working had been shown.

17. Around 30% of candidates used simple interest only and therefore gained 1 mark out of the 3 available; 3120 and 6240 were common incorrect answers. A significant number of candidates could not work out 4% of 3000, 24% of candidates failed to gain any marks in this question.

18. Foundation

In part (a), 57% gave the correct answer. Parts (b) and (c) were less well done, with incorrect positioning of the decimal point accounting for the majority of the errors made.

Higher

Part (a) was answered correctly by about 90% of the candidates and almost 70% were successful in part (b). Many of those who answered (b) incorrectly did not appreciate that the answer had to be less than 1. Part (c) proved to be the most difficult with about half of the candidates giving the correct answer. The most common incorrect answer in this part was 32.20.

19. Specification A

Foundation

The majority of candidates gained full marks for this question. The main misconception was in the operations required, and it was not uncommon to find candidates applying the operations the wrong way around in (a) and (b). Again the absence of a calculator was an inhibitor, leading to complex multiple addition and subtraction methods which rarely gained any marks.

Higher

The majority of students gained full marks on this question. Many however multiplied when they should have divided and vice versa.

Candidates need to be encouraged to write out their working as too many merely gave answer only solutions, some of which you suspect, but without any evidence, were copying errors e.g. £564 in(a) or £87 in (b). Some candidates used repeated addition in (a) rather than multiplication.

Specification B

Foundation

Converting from pounds sterling to euros and the reverse seemed to be well within the experience of the students with nearly half the candidates changing both values correctly. It appeared to come down to knowing whether to multiply or divide. In part (a) writing down 325 × 1.68 helped to reinforce the fact they would be getting numerically more euros than the pounds they were exchanging.

Similar thinking applied in part (b) gave rise to a division. However, there did appear to be more correct answers to part (b) than part (a).

Higher

This was a standard currency exchange question and it was pleasing to see so many candidates carry put the correct operation s and get the correct answer. There were a few candidates who did the operations the wrong way round for the two parts but they were in a small minority. A few candidates did not read the second part carefully enough and divided by the currency rate from the first part.

20. The advice given to many candidates is to calculate the numerator and denominator separately before dividing to get the final answer.

This advice was ignored by many candidate who just put the numbers into their calculator in the order given in the question and hoped for the best, which was usually no marks as a result. A significant number doubled 3.2 rather than squaring. In part (b) most students did not understand what 1 significant figure meant, and gave their answer to 1dp instead. Many who gave a negative answer in (a) rounded their answer to a positive answer in (b).

21. The great majority of candidates realised that they had to multiply 13.4 by 405 and so were awarded at least the first method mark. Confusion with monetary units often lead to no further marks being gained. £5445.75 (£5427 + £18.75) was the most common error. Such candidates obviously not appreciating that £5445.75 is a little excessive for a mobile phone bill. To be awarded the second method mark, candidates were required to show, clearly, the units in which they were working.

22. This question was generally not well done with many possibly "guessing" their answers. There was little evidence of the given fractions actually being converted into decimals.

23. Candidates used a variety of methods to work out 25.6 × 1.6 with the mean mark for this 3 mark question being only 0.4 The most common error using a traditional long multiplication approach was to add 1536 to 256. As this was a conceptual error, this scored no marks. Many used grid methods but then failed to deal with the decimal points correctly. Candidates would be better off ignoring the decimals when using this method, and use 200, 50 and 6 for 25.6 as well as using 10 and 6 for 1.6 and then deal with the decimals in the answer only. The method of using Napier's Bones was also popular. Here candidates tended to score at least one mark, often making an error by not carrying the 1 in the addition of the diagonals.

24. Many candidates clearly did not understand the concept of meter readings and utility bill calculations. Multiplying the sum of the two meter readings by 52 was a common error. This was often left as an answer of £607672 and sometimes £6076.72, gaining one and two marks respectively. Candidates readily accepting a gas bill of such magnitude.

Weaker candidates chose to divide the sum, or sometimes the difference, of the readings by 52 Even when the difference (1412) was multiplied by 52 an answer of £73424 often seen.

25–32. No Reports available for these questions.

33. At this level the use of a calculator was usually good. Candidates failing to calculate the denominator (3.25) often used incorrect order of operations and this usually lead to an answer of 15.2….

An answer of 0.2083 recurring was common, given by those giving the reciprocal.

34. No Report available for this question.

35. Many seemed to have access to a calculator to deal with this question as there were very few attempts at a long multiplication method.

Adding the two numbers together, arriving at 5.5 scored a method mark (the 5.5 had to be seen somewhere in the working), but squaring the outcome was not always understood. Evidence of squaring the numbers individually and then performing the addition was the most prolific error along with interpreting the '2' as meaning 'multiply by 2'. There is a need to read and understand the instructions given in the question especially with regard to 'writing down all the figures on your calculator display'. Around a third of the candidates answered part (a) correctly with about 12% scoring 1 mark, generally for 5.5 seen.

Candidates struggled to write their answer to part (a) correct to 1 significant figure with only around 4% rounding their answer correctly.

Where candidates had their calculators set in fraction mode, they were awarded both marks in (a) for $\frac{6897}{40}$. However, they then had no idea how to round this answer in part (b) with the majority just attempting to round the numerator of their fraction.

36. Those candidates who showed some intermediate working out usually went on to gain full marks in the calculation in part (a). Many candidates, preferring to compute the calculation with one visit to the calculator, often made mistakes by applying an incorrect order of operations, usually resulting in an answer of 2.465246763…It was also not uncommon to see an answer of 0.03699 (the inverse of the correct answer). In part (b) candidates were able to gain the mark irrespective of their accuracy in part (a). Indeed many with 2.465246763… in part (a) correctly rounded to give 2.5 to gain this award. However a significant number wrote 2.4. With the correct answer of 27.0343336 in part (a), many gave 27, 27.03 or 27.00 for their answer to part (b), all gaining no credit.

37. In this type of question most candidates do, in general, realise that the required answer is using the digits of the third of the numerical term. In part (a) this understanding usually lead to a correct answer of 17.01, however in part (b) performance was much less good; 4.86 and 48.6 being very common incorrect answers seen.

38. Most candidates (70%) could express 24 as a fraction of 36 scoring at least one mark. However, although many could simplify this fraction by dividing both by 2 or 3 or even dividing both by 6, only 33% of these candidates were able to write the fraction in its simplest form.

Candidate struggled with part (b) and seldom chose a valid method for changing the fraction to 0.6 A few did attempt division but many divided 5 by 3 reaching an answer of 1.666 Those that changed the fraction into tenths were more successful but the vast majority of the candidates wrote their answer as 3.5 or 0.35 or even 0.035

Only 22% of the candidates got this part correct.

39. Many candidates still find difficulty when finding the product of two numbers using long multiplication methods, particularly when multiplying decimal numbers. Many candidates found success in using 'traditional' methods of long multiplication although, in many cases, an answer of 1296 (or 129.6) was given as a result of ignoring or misplacing the decimal point. Matrix and multiplication table methods were also popular approaches, however many failed to demonstrate a complete method in their inability to correctly work out 0.4×0.2 and 0.4×0.04, incorrect answers of 0.8 and 0.16 were commonplace, showing a lack in the understanding of place value.

An incorrect answer of 1016 was common from weaker candidates who simply calculated $50 \times 20 = 1000$ and $4 \times 4 = 16$.

Napier's bones method is still popular, however this often leads to candidates making errors with the digits in the diagonals or getting the diagonals to face the wrong way.

40. A poorly answered question with many candidates not gaining the mark for (a) but picking up the mark in (b) for writing their answer to (a) correct to one decimal place. A frequent response to (a) was to write the square root of 2 as the answer.

41. This question was not well understood with few candidates gaining all three marks. Candidates gained most success with part (b) whilst part (c) was only seldom answered correctly. A surprising number of candidates tried to use long multiplication methods to find the answer, often with little success.

42. There were many correct answers in part (a), the only common error to divide rather than multiply. The greatest error in part (b) was in not reading the question. There were far too many candidates who neglected to include **two** necklaces in their calculations. Those who chose to work out the total, or do the conversion first were equally split, with similar problems of operator as indicated for part (a).

43–44. No Reports available for these questions.

45. Foundation

This question was very poorly answered even though it was testing the use of a calculator on a calculator paper. The modal answer was for finding the square root of 12.63 and then adding the square of 18. Another group of candidates calculated 12.63 + 18^2 but then did not square root their answer. Unfortunately these answers were incorrect. Only 18% of candidates gave the fully correct answer whilst a further 11% gained 1 mark usually for calculating 336.63 or writing the answer as 18.3 rather than giving all the figures on their calculator display as required.

Higher

The great majority of candidates either scored full marks for a correct answer or no marks for evaluating $\sqrt{2.63} + 18^2$ rather than the expression given. Most of the candidates who failed to gain any marks wrote an answer down without any intermediate working. If they had written down some working they may have given thought to the order of operations required. Despite the instruction to write down all the figures from the calculator display, a significant proportion of candidates went on to round their answer. Further rounding was ignored if candidates had written the full version in the working space. Some calculators give the answer in the form $\frac{7\sqrt{687}}{10}$. This was accepted. In this question, the first on the paper, 59% of candidates were awarded 2 marks, but 33% of candidates could not be awarded any marks.

46. This question was well understood and a surprising 65% of candidates obtained the fully correct answer of 16. Many candidates tried unsuccessfully with repeated addition or subtraction methods and did gain some marks for incorrect answers. The least successful solutions were for those candidates who tried trial and improvement solutions as they usually forgot the adult ticket price was different to the child ticket price. 26% of candidates scored no marks.

47–48. No Reports available for these questions.

49. Foundation

This question was poorly attempted by all candidates with only 18% of candidates able to give the correct answer in (a). Many answers seen here, the most common being 29.8166666... or 6.00694… which were incorrect. A method mark for 34.6 and/or 2.4 was often gained in part (a) but working was frequently not shown. In part (b) the understanding of writing to 2 decimal places was poorly attempted.

Many candidates truncated their answer some gave their answer to 2 significant figures and a large number moved the decimal point 2 places (left or right). Only 8% of candidates were able to gain full marks on the whole question the style of which is quite common.

Higher

This question was not that well attempted on this higher paper with only 49% of candidates able to give the correct answer in (a). Many answers were seen here, the most common being 29.8166666… or 6.00694… which were incorrect. A method mark for 34.6 and/or 2.4 was often gained in part (a) but working was frequently not shown.

In part (b) the understanding of writing to 2 decimal places too was poorly attempted. Many candidates truncated their answer some gave their answer to 2 significant figures and a large number moved the decimal point 2 places (left or right). It was interesting to note that 29% of candidates scored only 1 mark or no marks on this question which appears regularly on this paper.

50. No Report available for this question.

51. Foundation

Almost one third of candidates answered this question successfully, many of whom did not show any working. The question was a good discriminator and many candidates who did not give the correct answer were awarded 1 mark for demonstrating that they could correctly evaluate at least one of "$3 \cdot 4^2$" or "$2 \cdot 6^2$". Perhaps, not surprisingly, many candidates failed to ensure that the numerator was fully evaluated, either by using the brackets function on their calculator or by writing down intermediate working, before dividing by 1·6. Of the 48% of candidates who could not be awarded any marks, most multiplied by 2 rather than squaring or worked out "$3 \cdot 4 – 2 \cdot 6$" rather then "$3 \cdot 4^2 –$ "$2 \cdot 6^2$". These errors usually lead to the incorrect answers "1" and "0·5".

Higher

This question was answered well with 72% of the candidates being awarded full marks. Some candidates did not evaluate the numerator before performing division by 1·6. The evidence suggests that these candidates had not realised the need to use the brackets keys on their calculator or to record intermediate working. A generous mark scheme enabled the candidates to gain one mark for correctly evaluating at least one of $3 \cdot 4^2$ and $2 \cdot 6^2$.