

**Q1.** Mrs Moger took a group of children to the theatre.

**Adult Ticket £13.20**

**Child Ticket £8.30**

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)**

**Q2.** Use your calculator to work out

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

Write down all the figures on your calculator display.

.....

(Total 2 marks)

**Q3.** 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)

**Q4.** Given that  $32 \times 14 = 448$

write down the value of

(a)  $32 \times 1.4$

.....

(1)

(b)  $0.32 \times 14$

.....

(1)

(c)  $448 \div 320$

.....

(1)

(Total 3 marks)

**Q5.** (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)

- Q6.** (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.

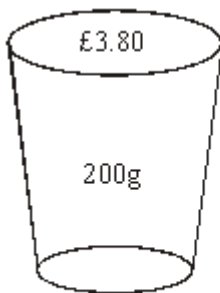
.....

(1)  
(Total 3 marks)

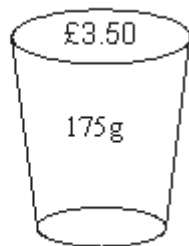
- Q7.** Work out  $\frac{3.4^2 - 2.6^2}{1.6}$ .

.....  
(Total 2 marks)

**Q8.**



Large



Regular

A Large tub of popcorn costs £3.80 and holds 200g.  
A Regular tub of popcorn costs £3.50 and holds 175g.

Which is the better value for money?

.....  
(Total 3 marks)

**Q9.** Use your calculator to work out

$$\frac{\sqrt{6700} - 2.38^2}{3.6^2 + 5.71}$$

You must give your answer as a decimal.  
Give your answer to three significant figures.

.....  
(Total 3 marks)

**Q10.** Mrs White wants to buy a new washing machine.

Three shops sell the washing machine she wants.

**Clean Machines**



**Washing machine**

Buy now pay later!

**Electrics**



**Washing machine**

$\frac{1}{4}$  off the usual price

**Wash 'n' Go**



**Washing machine**

£280

£50 deposit plus

of

plus

10 equal payments of £27

£420

VAT at  $17\frac{1}{2}\%$



Mrs White wants to buy the cheapest one.  
She decides to buy her washing machine from one of these 3 shops.

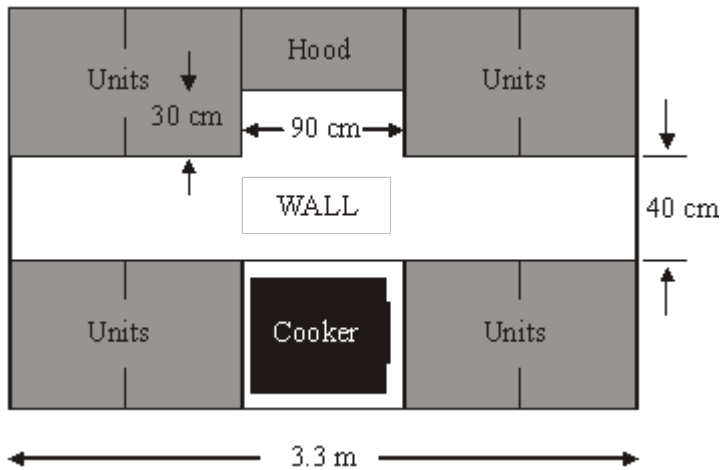
From which of these shops should she buy her washing machine?  
You must show how you decided on your answer.

.....

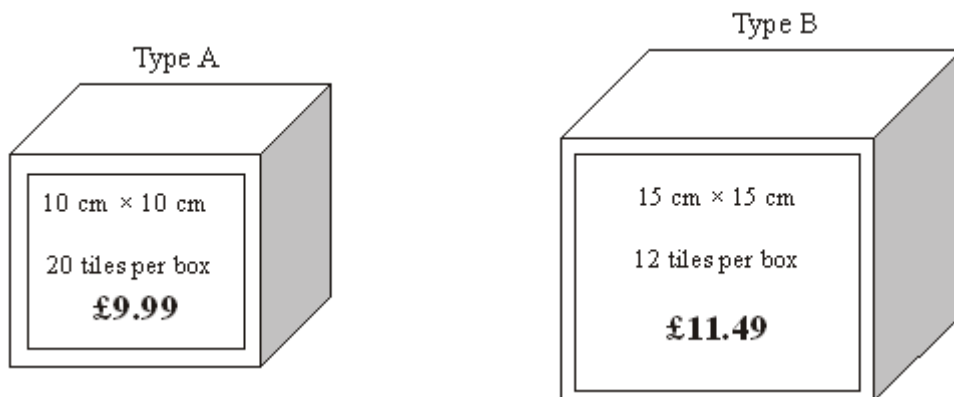
**(Total 6 marks)**

**Q11.** The diagram shows a wall in Jenny's kitchen.

Diagram **NOT**  
accurately drawn



Jenny wishes to tile this wall in her kitchen.  
She chooses between the two types of tile shown below.

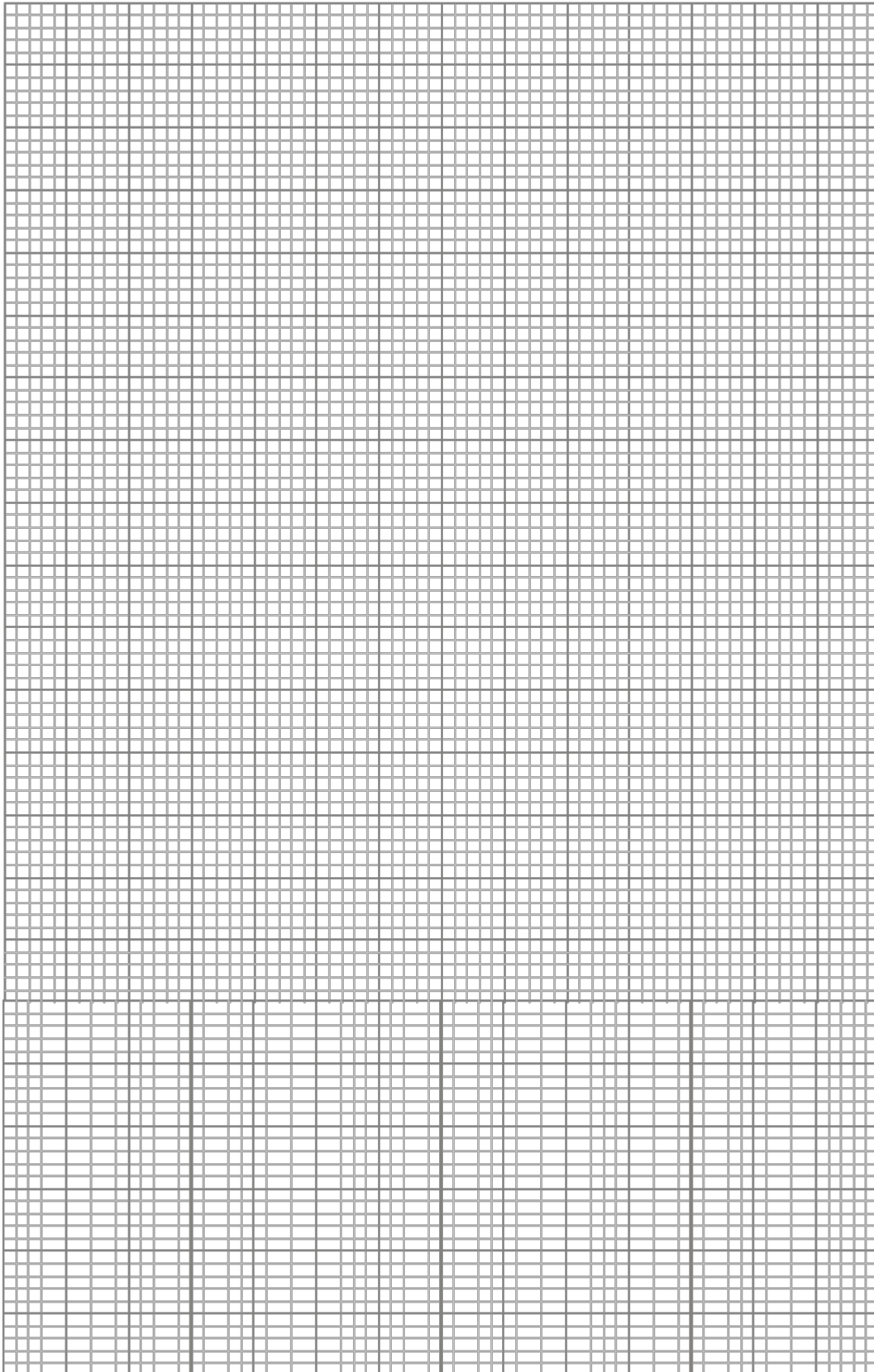


(a) Which tiles should Jenny use to spend the least amount of money on tiling the wall?

You must show all of your working.

A Box of Type A tiles has dimensions  $10.5 \text{ cm} \times 10.5 \text{ cm} \times 21 \text{ cm}$ .  
Readypac wants to produce cartons which hold 12 boxes of Type A tiles, when full.

(b) On the grid below, design a net of a carton that Readypac could use.



(3)  
(Total 9 marks)

**Q12.** Anwar, Bethany and Colin each earn the same weekly wage.

Each week, Anwar saves 12% of his wage and spends the rest.

Each week, Bethany spends  $\frac{7}{8}$  of her wage and saves the rest.

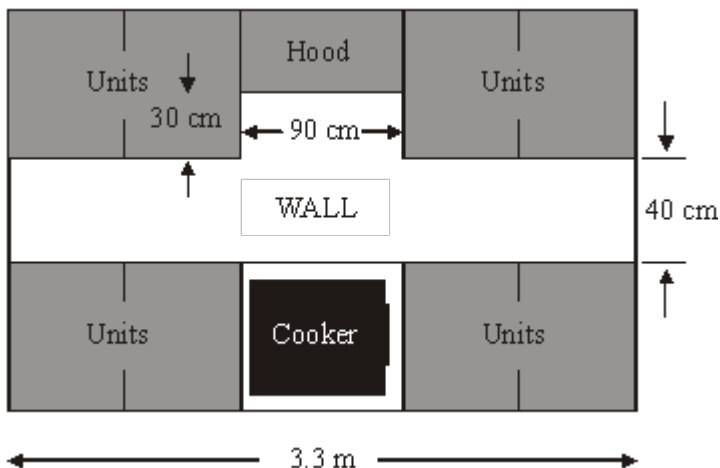
The ratio of the money Colin saves each week to what he spends is 1 : 9

Which of Anwar, Bethany and Colin, saves the most money each week?  
You must show each stage of your working.

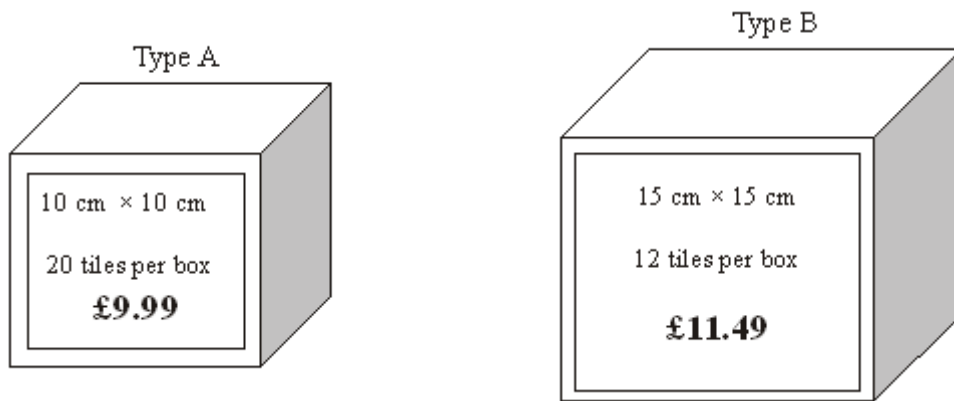
..... (Total 4 marks)

**Q13.** The diagram shows a wall in Jenny’s kitchen.

Diagram **NOT** accurately drawn



Jenny wishes to tile this wall in her kitchen.  
She chooses between the two types of tile shown below.



Which tiles should Jenny use to spend the least amount of money on tiling the wall?  
You must show all of your working.

(Total 6 marks)

- Q14.** Kylie wants to invest £1000 for one year.  
She considers two investments, Investment A and Investment B.

<b>Investment A</b>	<b>Investment B</b>
£1000	£1000
Earns £2.39 per month	Earns 3.29% interest per annum
<b>plus</b>	Interest paid yearly by cheque.
£4.50 bonus for each complete year	
Interest paid monthly by cheque.	

Kylie wants to get the greatest return on her investment.

Which of these investments should she choose?

(Total 5 marks)

**Q15.** 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)

**Q16.**



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)

**Q17.** Work out an estimate for  $\frac{302 \times 9.96}{0.51}$

.....

**(Total 3 marks)**

**Q18.** Using the information that

$$4.8 \times 34 = 163.2$$

write down the value of

(a)  $48 \times 34$

.....

**(1)**

(b)  $4.8 \times 3.4$

.....

**(1)**

(c)  $163.2 \div 48$

.....

(1)  
(Total 3 marks)

**Q19.** 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)

**Q20.** (a) Work out  $\frac{4.6 + 3.85}{3.2^2 - 6.51}$

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)

**Q21.** 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)

**Q22.** Use the information that

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

to find the value of

(a)  $3.22 \times 4.8$

.....

(1)

(b)  $0.322 \times 0.48$

.....

(1)

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

.....

(1)

(Total 3 marks)

**Q23.** Imran wants to work out how much tax he needs to pay.

Last year he earned £18 000

He does not pay Income tax on the first £6475 he earned.  
He pays tax of 20 pence for each pound he earned above £6475

He pays the tax in two equal half-yearly instalments.

(a) How much Income tax does Imran have to pay in his first half-yearly instalment?

.....

(4)

Imran wants to know what percentage of his earnings he pays in tax.

- (b) Calculate the Income tax Imran has to pay as a percentage of his earnings last year.

..... %

(2)  
(Total 6 marks)

**Q24.** Use your calculator to work out  $\frac{\sqrt{13.2 - 6.8}}{3.25 + 4.9}$

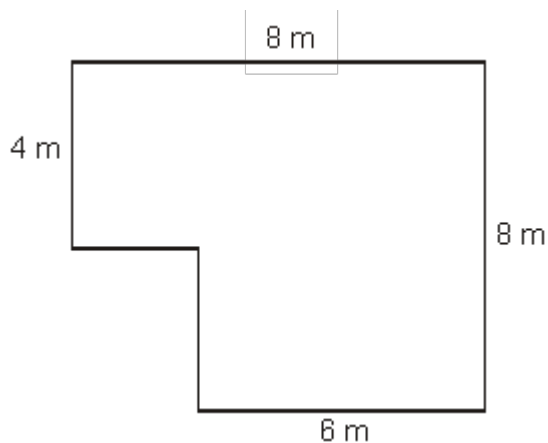
Give your answer as a decimal.

Write down all the figures on your calculator display.

.....

(Total 2 marks)

Q25.

Diagram **NOT**  
accurately drawn

The diagram is a plan of the floor of Nikola's room.  
All the angles are right angles.  
Nikola is going to lay flooring to cover all the floor.

She can choose either carpet tiles or wood strips.

Carpet tiles come in packs of 32 and are square. They measure 50 cm by 50 cm.  
Wood strips come in packs of 10 and are rectangular. They measure 2 m by 25 cm.

She only wants to use one type of flooring and buy as few packs as she can.  
Which type of flooring should she choose?



.....

**(Total 6 marks)**

M1.

Working	Answer	Mark	Additional Guidance
$146 - 13.20 = 132.80$ $132.80 \div 8.30$	16	3	<b>M1</b> for first step in a valid method eg $146 - 13.20$ or sight of $132.8(0)$ <b>M1</b> for " $132.80 \div 8.3$ " <b>A1</b> cao <b>Alternative 1 (repeated addition)</b> <b>M1</b> for repeated addition of 8.30 (at least twice) <b>M1</b> for $13.20 +$ repeated addition of 8.30 (at least 15 times) <b>A1</b> cao <b>Alternative 2 (repeated subtraction)</b> <b>M1</b> for repeated subtraction of 8.30 (at least twice) <b>M1</b> for repeated subtraction of 8.30 (at least 15 times with answers shown)
<b>Total for Question: 3 marks</b>			

M2.

Working	Answer	Mark	Additional Guidance
$= \sqrt{336.63}$	18.347....	2	$\frac{7\sqrt{687}}{10}$ <b>B2</b> for 18.347(47939) or $\frac{7\sqrt{687}}{10}$ ( <b>B1</b> for 18.3... or 336.63 seen)
<b>Total for Question: 2 marks</b>			

## M3.

	Working	Answer	Mark	Additional Guidance
(a)	$300 \times 1.25$	375	2	<b>M1</b> for $300 \times 1.25$ <b>A1</b> cao
(b)	$2 \times 2.60 + 6.40 + 9.80 (= 21.4)$ "21.4" $\div 1.25$	£17.12	4	<b>M2</b> for $2 \times 2.60 + 6.40 + 9.80 (= 21.4)$ ( <b>M1</b> for $2.60 + 6.40 + 9.80 (= 18.8)$ ) <b>M1</b> for "total" $\div 1.25$ <b>A1</b> cao <b>OR</b> <b>M1</b> for any value $\div 1.25$ (implied by at least one figure below) <b>M2</b> for "4.16" + "5.12" + "7.84" ( <b>M1</b> for "2.08" + "5.12" + "7.84" (= 15.04)) <b>A1</b> cao SC: <b>B1</b> for 18.8 , <b>B2</b> for 15.04
				<b>Total for Question: 6 marks</b>

## M4.

	Answer	Mark	Additional Guidance
(a)	44.8	1	<b>B1</b> for 44.8 cao
(b)	4.48	1	<b>B1</b> for 4.48 cao
(c)	1.4	1	<b>B1</b> for 1.4 cao
			<b>Total for Question: 3 marks</b>

M5.

	Working	Answer	Mark	Additional Guidance
(a)	$2.58 \times \sqrt{2} =$	3.648670991	1	<b>B1</b> for 3.648... cao
(b)		3.6	1	<b>B1</b> ft for "3.6"
<b>Total for Question: 2 marks</b>				

M6.

	Working	Answer	Mark	Additional Guidance
(a)	$\frac{26.4 + 8.2}{\sqrt{5.76}} = \frac{34.6}{2.4}$	14.4166(6667)	2	<b>B2</b> 14.4166(6667) accept $\frac{173}{12}$ or $14\frac{5}{12}$ or $14.41\dot{6}$  ( <b>B1</b> for 34.6 or 2.4 seen)
(b)		14.42	1	<b>B1</b> ft from "14.4166..." assuming original is to 3 d.p. or more
<b>Total for Question: 3 marks</b>				

M7.

Working	Answer	Mark	Additional Guidance
$3.4^2 - 2.6^2 = 4.8$	3	2	<b>M1</b> for $3.4 \times 3.4 - 2.6 \times 2.6$ with evidence of

$4.8 \div 1.6 =$		multiplication or 11.56 or 6.76 or 4.8 or 289/25 or 169/25 or 24/5 <b>A1</b> for 3 cao (SC <b>B1</b> for 7.335 or 1467/200)
<b>Total for Question: 2 marks</b>		

M8.

	Working	Answer	Mark	Additional Guidance
<b>FE</b>	$380 \div 200 = 1.9$  $350 \div 175 = 2$	Regular by 0.1p per gram	3	<b>M1</b> for $380 \div 200 (= 1.9)$ or $200 \div 380 (= 0.526)$  <b>M1</b> for $350 \div 175 (= 2)$ oe or $175 \div 350 (= 0.5)$ oe  <b>C1</b> for Regular with correct calculations
<b>Total for Question: 3 marks</b>				

M9.

Working	Answer	Mark	Additional Guidance
	4.08	3	<b>B1</b> for 5.6644 or 81.8535(2772...) or 76.1(8912772...) or 18.67  <b>B1</b> for 4.08(0831694)  <b>B1</b> cao
<b>Total for Question: 3 marks</b>			

M10.

	Working	Answer	Mark	Additional Guidance
<b>QWC</b> <b>(ii, iii)</b>	$280 \times 0.175 + 280 (= 329)$	£315, Electrics	6	<b>M1</b> for $50 + 10 \times 27$
<b>FE</b>	$420 \div 4 (= 315)$			
	$50 + 10 \times 27 (= 320)$			



Total for Question: 6 marks

M11.

		Working	Answer	Mark	Additional Guidance
<b>QWC</b> (i, ii, iii)  <b>FE</b>	(a)	Wall area = $330 \times 40 + 90 \times 30 = 13200 + 2700 = 15900 \text{ cm}^2$  Tile A area = $10 \times 10 = 100 \text{ cm}^2$  No of tiles = $15900 \div 100 = 159$  No of boxes needed = 8 ( $20 \times 8 = 160$ tiles)  $\pounds 9.99 \times 8 = \pounds 79.92$  Tile B area = $15 \times 15 = 225 \text{ cm}^2$  No of tiles = $15900 \div 225 = 70$ ( $225 \times 70 = 15700$ ) + 1  No of boxes needed = 6 ( $12 \times 6 = 72$ tiles) but some tiles will need to be cut, so 7 boxes needed $\pounds 11.49 \times 7 = \pounds 80.43$  <b>OR</b>  $330 \div 10 = 33$ A tiles per long row  $40 \div 10 = 4$ long rows  $33 \times 4 = 132$ tiles  $90 \div 10 = 9$ tiles per short row  $30 \div 10 = 3$ short rows  $9 \times 3 = 27$ tiles  $132 + 27 = 159$ tiles	Tile A is the most economical	6	<b>M1</b> for either $330 \times 40$ or $90 \times 30$ or $10 \times 10$ or $15 \times 15$  <b>A1</b> for 15900 and (100 or 225)  <b>M1</b> for $15900 \div 100$ or $15900 \div 225$  <b>A1</b> ft for 10 A boxes needed ( $'15900' \div '100'$ ) $\div 20$ rounded up to nearest whole number) or 7 B boxes needed ( $'15900' \div '225'$ ) $\div 12$ rounded up to nearest whole number)  <b>B1</b> for answers or $\pounds 79.92$ and $\pounds 80.43$ to justify the choice  <b>C1</b> for comment on the need to cut some Type B tiles <b>QWC: Decision must be stated, with all calculations attributable</b>  <b>OR</b>  <b>M1</b> for $330 \div 10$ or $90 \div 10$ or $330 \div 15$ or $90 \div 15$  <b>A1</b> for (33 and 9) or (22 and 6)  <b>M1</b> for $33 \times 4 + 9 \times 3$ or $22 \times 3 + 6 \times 2$  <b>A1</b> ft for 10 A boxes needed ( $'33 \times 4' \div '9 \times 3'$ ) $\div 20$ rounded up to nearest whole number) or for 7A boxes needed ( $'22 \times 3' \div '6 \times 2'$ ) $\div 12$ rounded up to nearest whole number)



	<p>No of boxes needed = 8 (<math>20 \times 8 = 160</math> tiles)</p> <p><math>\pounds 9.99 \times 8 = \pounds 79.92</math></p> <p><math>330 \div 15 = 22</math> B tiles per long row</p> <p><math>40 \div 15 = 3</math> long rows (1 row of tiles will be cut)</p> <p><math>22 \times 3 = 66</math> A tiles</p> <p><math>90 \div 15 = 6</math> tiles per short row</p> <p><math>30 \div 15 = 2</math> short rows</p> <p><math>6 \times 2 = 12</math> tiles</p> <p><math>66 + 12 = 78</math> tiles</p> <p>No of boxes needed = 7 (<math>12 \times 7 = 84</math> tiles)</p> <p><math>\pounds 11.49 \times 7 = \pounds 80.43</math></p>			<p><b>B1</b> for answers or <math>\pounds 79.92</math> and <math>\pounds 80.43</math> to justify the choice</p> <p><b>C1</b> for comment on the need to cut some Type B tiles <b>QWC:</b> <b>Decision must be stated, with all calculations attributable</b></p>
	<p>(b) The carton can have dimensions</p> <p><math>42 \text{ cm} \times 31.5 \text{ cm} \times 21 \text{ cm}</math> or</p> <p><math>63 \text{ cm} \times 21 \text{ cm} \times 21 \text{ cm}</math> or</p> <p><math>84 \text{ cm} \times 31.5 \text{ cm} \times 10.5 \text{ cm}</math> or</p> <p><math>63 \text{ cm} \times 42 \text{ cm} \times 10.5 \text{ cm}</math> or</p> <p><math>126 \text{ cm} \times 21 \text{ cm} \times 10.5 \text{ cm}</math></p>	Net	3	<p><b>B1</b> for quoting a correct set of dimensions (could be simply on the diagram)</p> <p><b>M1</b> for a net showing 6 rectangles that could form a cuboid</p> <p><b>A1</b> for an accurate scale drawing or lengths labeled accurately</p>
<b>Total for Question: 9 marks</b>				

M12.

Working	Answer	Mark	Additional Guidance
---------	--------	------	---------------------

Bethany	4
---------	---

Total for Question: 4 marks

M13.

	Working	Answer	Mark	Additional Guidance
<b>QWC</b> (ii, iii)	$330 \div 10 = 33$ A tiles per long row $40 \div 10 = 4$ long rows $33 \times 4 = 132$ tiles <b>FE</b> $90 \div 10 = 9$ tiles per short row $30 \div 10 = 3$ short rows $9 \times 3 = 27$ tiles $132 + 27 = 159$ tiles No of boxes needed $= 8$ ( $20 \times 8 = 160$ tiles) $\pounds 9.99 \times 8 = \pounds 79.92$  $330 \div 15 = 22$ B tiles per long row $40 \div 15 = 3$ long rows (1 row of tiles will be cut) $22 \times 3 = 66$ A tiles $90 \div 15 = 6$ tiles per short row $30 \div 15 = 2$ short rows $6 \times 2 = 12$ tiles $66 + 12 = 78$ tiles No of boxes needed $= 7$ ( $12 \times 7 = 84$ tiles) $\pounds 11.49 \times 7 = \pounds 80.43$  <b>OR</b>  Wall area = $330 \times 40 + 90 \times 30 = 13200 + 2700 = 15900 \text{ cm}^2$ Tile A area = $10 \times 10 = 100 \text{ cm}^2$ No of tiles = $15900 \div 100 = 159$ No of boxes needed $= 8$ ( $20 \times 8 = 160$ tiles) $\pounds 9.99 \times 8 = \pounds 79.92$ Tile B area = $15 \times 15 = 225 \text{ cm}^2$  No of tiles = $15900 \div 225 = 70$ $(225 \times 70 = 15750) + 1$ No of boxes needed $= 6$ ( $12 \times 6 = 72$ tiles) but some tiles will need to be cut, so 7 boxes	Tile A is the most economical	6	<b>M1</b> for $330 \div 10$ or $90 \div 10$ or $330 \div 15$ or $90 \div 15$  <b>A1</b> for (33 and 9) or (22 and 6)  <b>M1</b> for $33 \times 4 + 9 \times 3$ or $22 \times 3 + 6 \times 2$  <b>A1</b> ft for 10 A boxes needed (' $33 \times 4 + 9 \times 3$ ') $\div 20$ rounded up to nearest whole number) or for 7A boxes needed (' $22 \times 3 + 6 \times 2$ ') $\div 12$ rounded up to nearest whole number)  <b>B1</b> for answers or $\pounds 79.92$ and $\pounds 80.43$ to justify the choice  <b>C1</b> for comment on the need to cut some Type B tiles <b>QWC: Decision must be stated, with all calculations attributable</b>  <b>OR</b>  <b>M1</b> for either $330 \times 40$ or $90 \times 30$ or $10 \times 10$ or $15 \times 15$  <b>A1</b> for 15900 and (100 or 225)  <b>M1</b> for $15900 \div 100$ or $15900 \div 225$  <b>A1</b> ft for 10 A boxes needed (' $15900 \div 100$ ') $\div 20$ rounded up to nearest whole number) or 7 B boxes needed (' $15900 \div 225$ ') $\div$

needed $\pounds 11.49 \times 7 = \pounds 80.43$		12 rounded up to nearest whole number)  <b>B1</b> for answers or $\pounds 79.92$ and $\pounds 80.43$ to justify the choice  <b>C1</b> for comment on the need to cut some Type B tiles <b>QWC:</b> <b>Decision must be stated, with all calculations attributable</b>
<b>Total for Question: 6 marks</b>		

M14.

	Working	Answer	Mark	Additional Guidance
<b>QWC</b>	$2.39 \times 12 + 4.5$	33.18	5	<b>M1</b> for ' $2.39 \times 12$ ' + 4.5 or diagram showing 2.39, 4.78, 7.17, ..., 28.68 oe (condone one error)
<b>FE</b>	$3.29/100 \times 1000$	32.90		<b>A1</b> cao  <b>M1</b> for $3.29/100 \times 1000$ oe  <b>A1</b> cao  <b>C1</b> for Investment A identified <b>QWC:</b> <b>Decision must be stated, with calculations clearly attributable</b>
<b>Total for Question: 5 marks</b>				

M15.

Working	Answer	Mark	Additional Guidance
$\frac{22.4 \times 14.5}{8.5 \times 3.2} = \frac{324.8}{27.2}$	11.94117647	2	<b>M1</b> for 324.8 or 27.2 oe eg $\frac{1624}{5}, \frac{136}{5}$ <b>A1</b> 11.941(17647...) Accept $\frac{203}{17}, 11\frac{16}{17}$
<b>Total for Question: 2 marks</b>			

**M16.**

	Working	Answer	Mark	Additional Guidance
(a)	$(2.40 \times 10) + (4.50 \times 5)$ $= 24.00 + 22.50 = 46.50$ $50.00 - 46.50$	3.50	3	<b>M1</b> (2.40 × 10) or (4.50 × 5) or sight of 24 or 22.5(0) <b>M1</b> (2.40 × 10) + (4.50 × 5) or sight of 24 + 22.5(0) or sight of 46.5(0) <b>A1</b> cao Accept 3.5
(b)	$125 \times 2$	250	2	<b>M1</b> $125 \times 2$ <b>A1</b> cao
(c)	$648 \div 2$	324	2	<b>M1</b> $648 \div 2$ <b>A1</b> cao
<b>Total for Question: 7 marks</b>				

**M17.**

Working	Answer	Mark	Additional Guidance
---------	--------	------	---------------------

$\frac{300 \times 10}{0.5} = \frac{3000}{0.5}$	5890 – 6040	3	<p><b>M1</b> for any two of 300, 10 or 0.5</p> <p><b>M1</b> for <math>\frac{3000}{0.5}</math> or <math>300 \times 20</math> or <math>600 \times 10</math> or <math>\frac{3020}{0.5}</math></p> <p>or <math>302 \times 20</math> or <math>604 \times 10</math></p> <p><b>A1</b> for 5890 – 6040</p> <p>SC: <b>B2</b> for answer of 1500 or 1510</p>
			<b>Total for Question: 3 marks</b>

**M18.**

	Working	Answer	Mark	Additional Guidance
(a)		1632	1	<b>B1</b> for 1632 or 1632.0
(b)		16.32	1	<b>B1</b> for 16.32 cao
(c)		3.4	1	<b>B1</b> for 3.4 cao
				<b>Total for Question: 3 marks</b>

**M19.**

Working	Answer	Mark	Additional Guidance
$3000 \times \frac{4}{100} + 3000 = 3120$ $3120 \times \frac{4}{100} + 3120 = 3244.80$	3244.80	3	<p><b>M1</b> for <math>3000 \times \frac{4}{100}</math> or 120 or 240  or 3240 or 3120 or <math>1.04 \times 3000</math>  or 2880 or 2760</p> <p><b>M1(dep)</b> for <math>(3000 + '120') \times \frac{4}{100}</math></p>

or $3000 \times \left(\frac{104}{100}\right)^2$		or 124.8(0) or "3120"×1.04 <b>A1</b> £3244.8(0) <b>OR</b> $3000 \times \left(\frac{104}{100}\right)^2$ or $3000 \times \left(\frac{104}{100}\right)^3$ <b>M2</b> <b>A1</b> £3244.8(0) NB : If correct answer seen then ignore subsequent years
<b>Total for Question: 3 marks</b>		

M20.

	Working	Answer	Mark	Additional Guidance
(a)	$4.6 + 3.85 = 8.45$ $3.2^2 - 6.51 = 3.73$ $8.45 \div 3.73 =$	2.26541555	2	$\frac{169}{20}$ or $\frac{256}{25}$ or $\frac{373}{100}$ or 3.73 or 10.24 or 8.45 seen  <b>M1</b> for $\frac{169}{20}$ or $\frac{256}{25}$ or $\frac{373}{100}$ or 3.73 or 10.24 or 8.45 seen  <b>A1</b> for 2.265(41555); accept $\frac{845}{373}$
(b)		2	1	<b>B1</b> ft for 2 or follow through their answer to part (a) NB: 2.0 gets <b>B0</b>
<b>Total for Question: 3 marks</b>				

M21.

	Working	Answer	Mark	Additional Guidance
--	---------	--------	------	---------------------

(a)	$325 \times 1.68$	546	2	<b>M1</b> for $325 \times 1.68$ seen or digits 546 <b>A1</b> for 546, accept 546.00, 546.0
(b)	$117 \div 1.5$	78	2	<b>M1</b> for $117 \div 1.5$ seen or digits 78 <b>A1</b> for 78, accept 78.00, 78.0
<b>Total for Question: 4 marks</b>				

**M22.**

	Answer	Mark	Additional Guidance
(a)	15.456	1	<b>B1</b> cao
(b)	0.15456	1	<b>B1</b> cao
(c)	3220	1	<b>B1</b> cao
<b>Total for Question: 3 marks</b>			

**M23.**

	Working	Answer	Mark	Additional Guidance
(a)	$18000 - 6475 = 11525$ $11525 \times \frac{20}{100} = 2305$	£1152.50	4	<b>M1</b> $18000 - 6475$ <b>A1</b> 11525





$$(b) \frac{2305}{18000} \times 100$$

12.8

2

<b>Total for Question: 6 marks</b>
------------------------------------

**M24.**

Working	Answer	Mark	Additional Guidance
$\frac{\sqrt{6.4}}{8.15}$	0.31040762...	2	<b>M1</b> correct order of evaluation as evidenced by sight of 6.4 or 8.15 <b>A1</b> 0.31040(762....)
<b>Total for Question: 2 marks</b>			

**M25.**

	Working	Answer	Mark	Additional Guidance
<b>FE</b>	Area of the room $= 4 \times 8 + 4 \times 6 = 56$  Area of a tile $= 0.5 \times 0.5 = 0.25$  Number of tiles $= 56 \div 0.25 = 224$  Cost = $4 \times 224$  <b>OR</b>  No of tiles around room $= 2 \times \text{lengths of room} =$ 8, 16, 16, 12	£ 896	6	<b>M1</b> for full method for finding the area of the room  <b>A1</b> at least one area correct  <b>B1</b> for area of tile = $0.25\text{m}^2$ or $2500\text{ cm}^2$ or 4 tiles = $1\text{m}^2$  <b>M1</b> for area of room $\div$ area of a tile  <b>M1</b> for $4 \times$ number of tiles  <b>A1</b> cao  <b>OR</b>  <b>M1</b> for doubling each length to show

<p>Total number of tiles <math>= 8 \times 16 + 8 \times 12 = 224</math></p> <p>Cost = <math>4 \times 224</math></p>		<p>number of tiles for each side</p> <p><b>B1</b> for 8, 16, 16 and 12</p> <p><b>M1</b> for a full method of finding the number of tiles (<math>12 \times 16 + 8 \times 4</math>)</p> <p><b>A1</b> for at least one 'section' correct</p> <p><b>M1</b> for <math>4 \times '224'</math></p> <p><b>A1</b> cao</p>
<b>Total for Question: 6 marks</b>		

- E1.** 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.

**E2. 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  $\sqrt{2.63} + 18$  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.

**E3.** 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).

**E4.** 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.

**E5.** 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.

**E6. 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 29.816666... 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.

**E7. 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 than " $3 \cdot 4^2 - 2 \cdot 6^2$ ". 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  $2 \cdot 6^2$ .

**E15. 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.

- E16.** 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.

**E17. 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.

**E18. 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.

- E19.** 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.

**E20.** 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).

**E21. 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  $325 \times 1.68$  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 out the correct operations 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.

### E22. 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.