Q1. Use your calculator to work out

$\sqrt{12.63 + 18^2}$

Write down all the figures on your calculator display.

.....

(Total 2 marks)

Q2. (a) Change $\frac{5}{8}$ to a decimal.

.....

(2)

(b) Work out $\frac{2}{5} + \frac{1}{7}$

.....

(2)

(c) Work out $2\frac{1}{2} \times 1\frac{3}{5}$

.....

(3)
(Total 7 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. (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)

Q5. (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)

Q6. Alan bought 20 melons for £15.

$\frac{1}{5}$ of the melons were bad so he threw them away.

He sold the remaining melons for £1.50 each.

Work out Alan's profit.

£ .....

(Total 4 marks)

Q7. Work out $\frac{3}{5} \times \frac{1}{4}$.

.....

(Total 2 marks)

Q8. Work out $\frac{1}{8} + \frac{3}{4}$.

.....

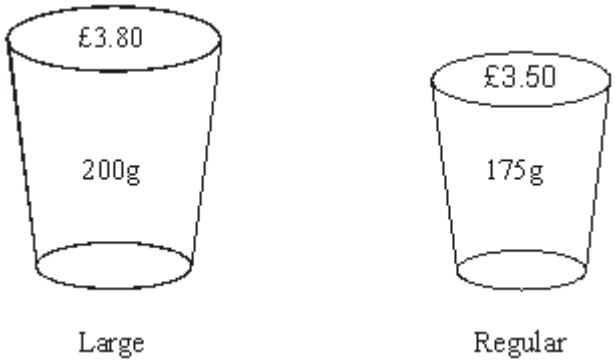
(Total 2 marks)

Q9. Work out $\frac{3.4^2 - 2.6^2}{1.6}$.

.....

(Total 2 marks)

Q10.



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)

Q11. Jason earns £50 000 a year.

He has to pay income tax.

He is allowed to earn £6500 before paying tax.
He pays 20% tax on the next £37 400.
He then pays 40% tax on the rest.

His employer deducts the income tax each month.

How much income tax does Jason get deducted each month?

£.....

(Total 5 marks)

Q12. 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)

Q13. Mrs White wants to buy a new washing machine.

Three shops sell the washing machine she wants.

Clean Machines	**Electrics**	**Wash 'n' Go**
		
Washing machine	**Washing machine**	**Washing machine**
Buy now pay later! £50 deposit plus	$\frac{1}{4}$ off the usual price of	£280 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.

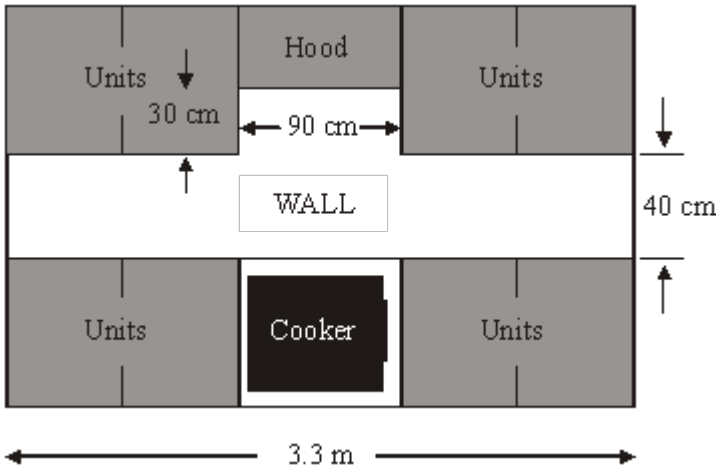
From which of these shops should she buy her washing machine?
You must show how you decided on your answer.

.....

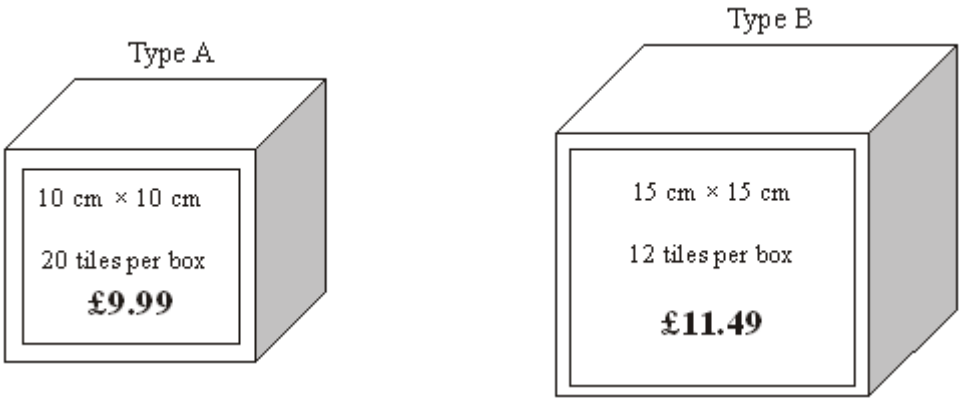
(Total 6 marks)

Q14. 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.



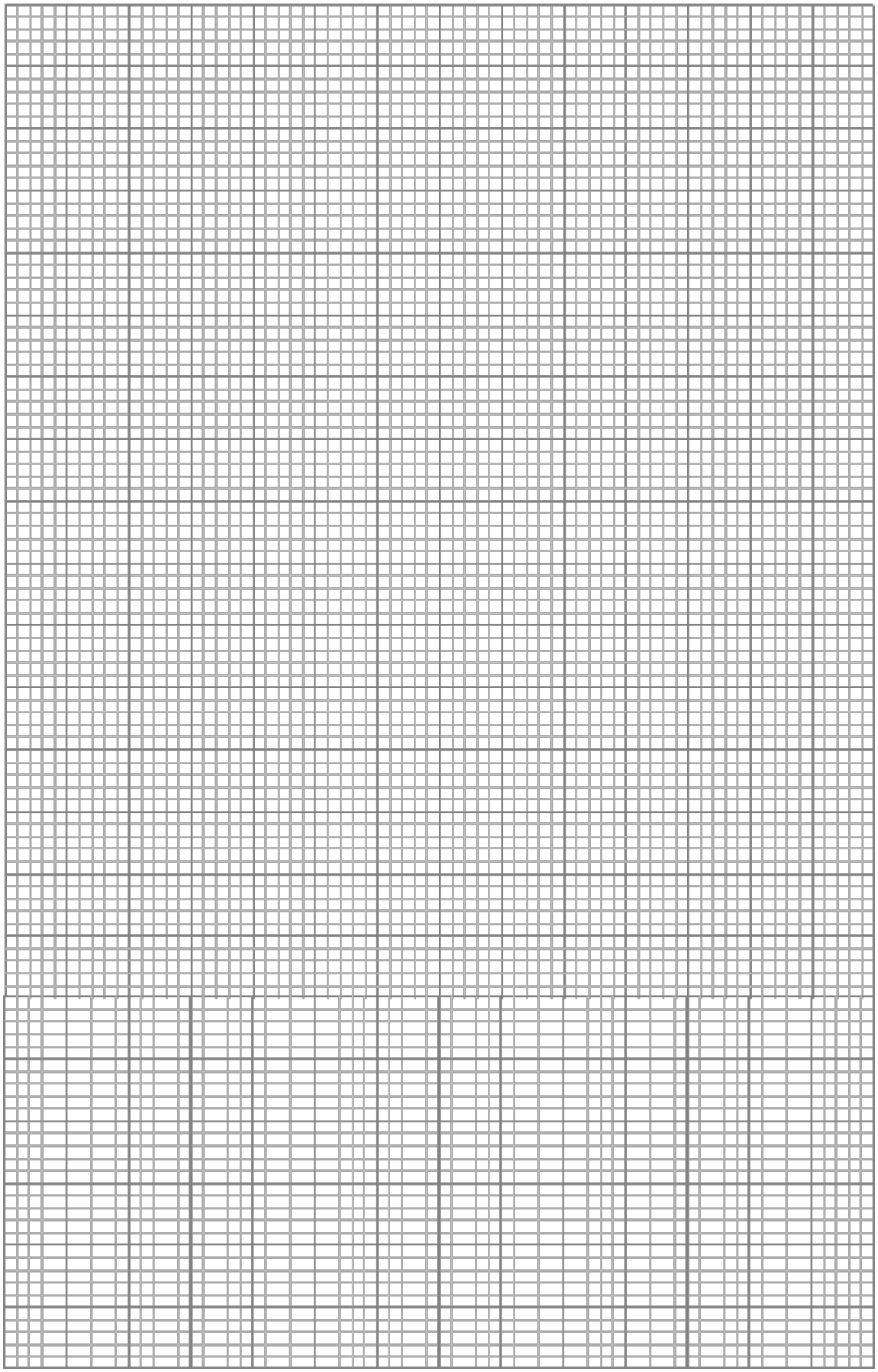
(a) Which tiles should Jenny use to spend the least amount of money on tiling the wall?

You must show all of your working.

(6)

A Box of Type A tiles has dimensions 10.5 cm × 10.5 cm × 21 cm.
Readypac wants to produce cartons which hold 12 boxes of Type A tiles, when full.

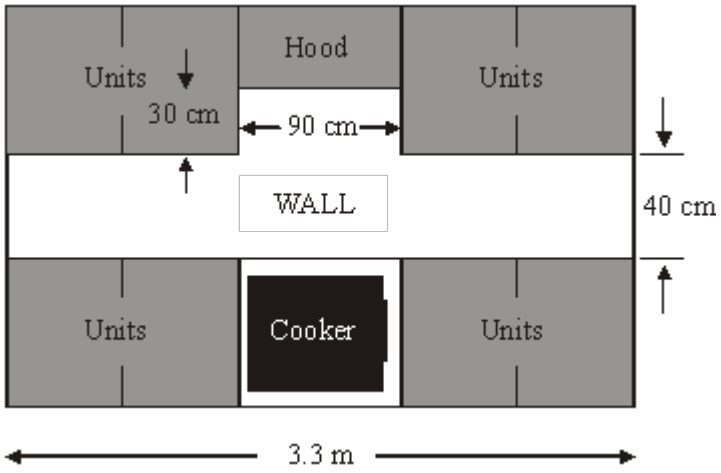
(b) On the grid below, design a net of a carton that Readypac could use.



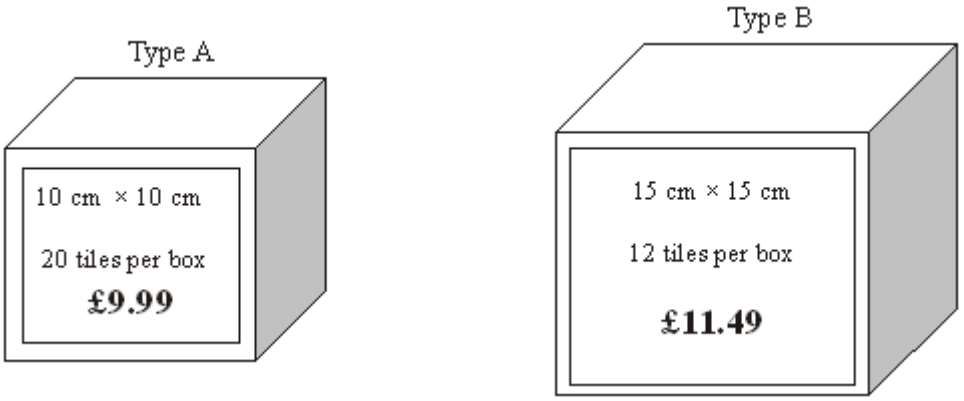
(3)
(Total 9 marks)

Q15. 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)

Q16. Kylie wants to invest £1000 for one year.
She considers two investments, Investment A and Investment B.

Investment A	**Investment B**
£1000	£1000
Earns £2.39 per month	Earns 3.29% interest per annum
plus	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)

Q17.

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)

Q18. David buys some stamps.
Each stamp costs 25p.

The total cost of the stamps is £3

(a) Work out the number of stamps David buys.

.....

(2)

Adam, Barry and Charlie each buy some stamps.
Adam buys x stamps.
Barry buys three times as many stamps as Adam.

(b) Write down an expression, in terms of ***x***, for the number of stamps Barry buys.

.....

(1)

Charlie buys 5 more stamps than Adam.

(c) Write down an expression, in terms of ***x***, for the number of stamps Charlie buys.

.....

(1)
(Total 4 marks)

Q19. Kaysha has a part-time job.
She is paid £5.40 for each hour she works.
Last week Kaysha worked for 24 hours.

Work out Kaysha's total pay for last week.

£ .....

(Total 3 marks)

Q20. Use a calculator to work out

$$\sqrt{\frac{21.6 \times 15.8}{3.8}}$$

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

.....

(2)

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

.....

(1)
(Total 3 marks)

Q21. (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)

Q22. 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)

Q23. Use the information that

322 × 48 = 15 456

to find the value of

(a) 3.22 × 4.8

.....

(1)

(b) 0.322 × 0.48

.....

(1)

(c) 15 456 ÷ 4.8

.....

(1)
(Total 3 marks)

Q24. 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)

Q25. Use your calculator to work out $\frac{\sqrt{13.2 - 6.8}}{3.25 + 4.9}$

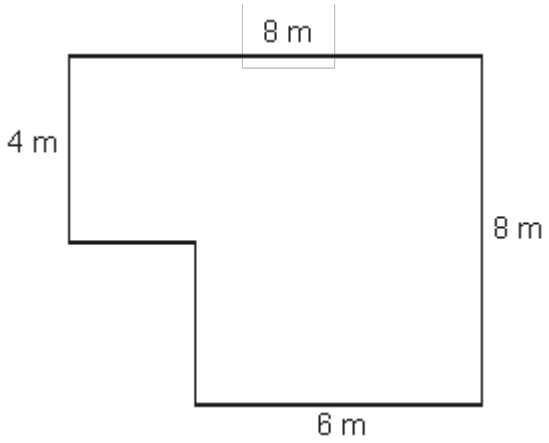
Give your answer as a decimal.
Write down all the figures on your calculator display.

.....

(Total 2 marks)

Q26.

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
= $\sqrt{336.63}$	18.347….	2	**B2** for 18.347(47939) or $\frac{7\sqrt{687}}{10}$ (**B1** for 18.3… or 336.63 seen)
			Total for Question: 2 marks

M2.

	Working	Answer	Mark	Additional Guidance
(a)	5.000 ÷ 8	0.625	2	**M1** for 5 ÷ 8 or 1 ÷ 8 × 5 **A1** cao
(b)	$\frac{14}{35} + \frac{5}{35}$ **Alternative** 0.4 + 0.143	$\frac{19}{35}$ oe	2	**M1** for correct common denominator of two fractions with at least one numerator correct **A1** for $\frac{19}{35}$ oe (for example $\frac{38}{70}$) Alternative **M1** for 0.4 and 0.14(2857…) (correct to 2dp.) **A1** for 0.54 or better
(c)	$\frac{5}{2} \times \frac{8}{5} = \frac{40}{10}$ **Alternative** 2.5 × 1.6	4	3	**M1** for $\frac{5}{2}$ or $\frac{8}{5}$ oe **M1** for $\frac{5}{2} \times \frac{8}{5}$ **A1** for 4 oe (accept $\frac{40}{10}$) **Alternative** **M1** For 2.5 and 1.6 **M1** For 4 with any number of 0s with or without a decimal point

				A1 4
				Total for Question: 7 marks

M3.

	Working	Answer	Mark	Additional Guidance
(a)	300 × 1.25	375	2	**M1** for 300 × 1.25 **A1** cao
(b)	2 × 2.60 + 6.40 + 9.80 (= 21.4) "21.4" ÷ 1.25	£17.12	4	**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
				Total for Question: 6 marks

M4.

	Working	Answer	Mark	Additional Guidance
(a)	2.58 × √2 =	3.648670991	1	**B1** for 3.648... cao
(b)		3.6	1	**B1** ft for "3.6"

	Total for Question: 2 marks

M5.

	Working	Answer	Mark	Additional Guidance
(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
				Total for Question: 3 marks

M6.

Working	Answer	Mark	Additional Guidance
20 ÷ 5 (= 4) 20 – "4" (= 16) "16" × 1.50 (= 24)	9	4	**M1** for 20 ÷ 5 **M1** for 20 – "4" where 0 < "4" < 20 **M1** for "16" × 1.50 where 0 < "16" < 20 **A1** cao
			Total for Question: 4 marks

M7.

Answer	Mark	Additional Guidance
$\frac{3}{20}$	2	**M1** for clear attempt to multiply numerators and multiply denominators e.g $\frac{3\times1}{5\times4}$ or $\frac{12\times5}{20\times20}$ **A1** for $\frac{3}{20}$ oe
		Total for Question: 2 marks

M8.

Working	Answer	Mark	Additional Guidance
$\frac{1}{8}+\frac{6}{8}$	$\frac{7}{8}$		**M1** for $\frac{6}{8}$ **OR** correct attempt to make fractions have a common denominator with at least one fraction correct **OR** for 0.125 and 0.75 seen **A1** for $\frac{7}{8}$ oe or 0.875
			Total for Question: 2 marks

M9.

Working	Answer	Mark	Additional Guidance
$3.4^2 - 2.6^2 = 4.8$ $4.8 \div 1.6 =$	3	2	**M1** for $3.4 \times 3.4 - 2.6 \times 2.6$ 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)
			Total for Question: 2 marks

M10.

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

M11.

Working	Answer	Mark	Additional Guidance
20% of £37 400 = £7480 50 000 – 37 400 – 6500 = £6100	£826.67	5	**M1** for attempt to find 20% of £37 400 **M1** for attempt to find how much

40% of 6100 = £2440 (“7480” + “2440”) ÷ 12			is taxed at 40% 50 000 – 37 400 – 6500 **M1** for attempt to find 40% of “6100” **M1** for monthly tax bill is (“7480” + “2440”) ÷ 12 **A1** for £826.67 cao
			Total for Question: 5 marks

M12.

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

M13.

	Working	Answer	Mark	Additional Guidance
QWC (ii, iii) **FE**	280 × 0.175 + 280 (= 329) 420 ÷ 4 (= 315) 50 + 10 × 27 (= 320)	£315, Electrics	6	**M1** for 50 + 10 × 27

	Total for Question: 6 marks

M14.

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

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

M15.

	Working	Answer	Mark	Additional Guidance
QWC (ii, iii)	330 ÷ 10 = 33 A tiles per long row 40 ÷ 10 = 4 long rows 33 × 4 = 132 tiles	Tile A is the most	6	**M1** for 330 ÷ 10 or 90 ÷ 10 or 330 ÷ 15 or 90 ÷ 15

FE	90 ÷ 10 = 9 tiles per short row 30 ÷ 10 = 3 short rows 9 × 3 = 27 tiles 132 + 27 = 159 tiles No of boxes needed = 8 (20 × 8 = 160 tiles) £9.99 × 8 = £79.92 330 ÷ 15 = 22 B tiles per long row 40 ÷ 15 = 3 long rows (1 row of tiles will be cut) 22 × 3 = 66 A tiles 90 ÷ 15 = 6 tiles per short row 30 ÷ 15 = 2 short rows 6 × 2 = 12 tiles 66 + 12 = 78 tiles No of boxes needed = 7 (12 × 7 = 84 tiles) £11.49 × 7 = £80.43 **OR** Wall area = 330 × 40 + 90 × 30 = 13200 + 2700 = 15900 cm^2 Tile A area = 10 × 10 = 100 cm^2 No of tiles = 15900 ÷ 100 = 159 No of boxes needed = 8 (20 × 8 = 160 tiles) £9.99 × 8 = £79.92 Tile B area = 15 × 15 = 225 cm^2 No of tiles = 15900 ÷ 225 = 70(225 × 70 = 15700) + 1 No of boxes needed = 6 (12 × 6 = 72 tiles) but some tiles will need to be cut, so 7 boxes needed £11.49 × 7 = £80.43	economical		**A1** for (33 and 9) or (22 and 6) **M1** for 33 × 4 + 9 × 3 or 22 × 3 + 6 × 2 **A1** ft for 10 A boxes needed ('33 × 4' ÷ '9 × 3') ÷ 20 rounded up to nearest whole number) or for 7A boxes needed ('22 × 3' ÷ '6 × 2') ÷ 12 rounded up to nearest whole number) **B1** for answers or £79.92 and £80.43 to justify the choice **C1** for comment on the need to cut some Type B tiles **QWC: Decision must be stated, with all calculations attributable** **OR** **M1** for either 330 × 40 or 90 × 30 or 10 × 10 or 15 × 15 **A1** for 15900 and (100 or 225) **M1** for 15900 ÷ 100 or 15900 ÷ 225 **A1** ft for 10 A boxes needed ('15900' ÷ '100') ÷ 20 rounded up to nearest whole number) or 7 B boxes needed ('15900' ÷ '225') ÷ 12 rounded up to nearest whole number) **B1** for answers or £79.92 and £80.43 to justify the choice **C1** for comment on the need to cut some Type B tiles **QWC: Decision must be stated, with all calculations attributable**
				Total for Question: 6 marks

M16.

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

M17.

	Working	Answer	Mark	Additional Guidance
(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
				Total for Question: 7 marks

M18.

	Working	Answer	Mark	Additional Guidance
(a)	300 ÷ 25	12	2	**M1** for 25 + 25 + 25 + ... or "3" ÷ 25 or £1 = 4 oe **A1** for 12 cao
(b)		$3x$	1	**B1** for $3x$ or $3 \times x$
(c)		$x + 5$	1	**B1** for x + 5 cao
				Total for Question: 4 marks

M19.

Working	Answer	Mark	Additional Guidance
540 24 2160 10800 12960 **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 10000 + 2000 + 800 160 = 12960	129.6(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. Condone 1 multiplication error, addition not necessary. **OR** **M1** for sight of a complete partitioning method, condone 1 multiplication error. Final addition not necessary. **A2** for 129.6(0)(p) cao

5 **0.4** 100 | 8 | **20** 20 | 1.6 | **4** 100 + 20 + 8 + 1.6 = 129.6			(**A1** (dep on **M1**) for correct addition placement of decimal point after final or for digits 1296(0) seen) SC: **B1** for addition of 24 lots of 5.4(0) or 540
			Total for Question: 3 marks

M20.

	Working	Answer	Mark	Additional Guidance
(a)	$\sqrt{\frac{21.6 \times 15.8}{3.8}}$ =	9.476841579	2	**M1** for 89.81052 …. or 341.28 or 4.86151… or $\frac{8532}{95}$ or $\frac{8532}{25}$ **A1** for 9.47684..... SC: **B1** for 9.476841579… truncated or rounded to at least 1 decimal place
(b)	$\sqrt{89.81052632}$	9.48	1	**B1** ft from (a) with at least 4 significant figures
				Total for Question: 6 marks

M21.

	Working	Answer	Mark	Additional Guidance

(a)	4.6 + 3.85 = 8.45 3.2^2 – 6.51 = 3.73 8.45 ÷ 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**
				Total for Question: 3 marks

M22.

	Working	Answer	Mark	Additional Guidance
(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
				Total for Question: 4 marks

M23.

	Answer	Mark	Additional Guidance
(a)	15.456	1	**B1** cao
(b)	0.15456	1	**B1** cao

(c)	3220	1	**B1** cao
			Total for Question: 3 marks

M24.

	Working	Answer	Mark	Additional Guidance
(a)	18000 – 6475 = 11525 $11525 \times \frac{20}{100} = 2305$	£1152.50	4	**M1** 18000 – 6475 **A1** 11525

(b)	$\frac{'2305'}{18000} \times 100$	12.8	2	

	Total for Question: 6 marks

M25.

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

M26.

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

	Total number of tiles = 8 × 16 + 8 × 12 = 224 Cost = 4 × 224			number of tiles for each side **B1** for 8, 16, 16 and 12 **M1** for a full method of finding the number of tiles (12 × 16 + 8 × 4) **A1** for at least one 'section' correct **M1** for 4 × '224' **A1** cao
				Total for Question: 6 marks

E1. 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.

E2. (a) The many students who got this wrong fell mainly into 3 camps.. Those who did not know that to convert 85to a decimal requires the division of 5 by 8 or its equivalent, those that could not carry out the division and those who tried to work out 58÷. A small number of candidates tried to do a chunking method along the lines of 0.5 + 0.5 ÷ 4 with the second part being worked out by repeated halving.

(b) Responses to this straightforward question were often disappointing, with the usual errors of 2/5 + 1/7 = 3/12 or 3/35 + 1/35 + =4/35 appearing.

(c) Many candidates were unaware of the standard method of multiplying mixed numbers by changing them to improper fractions. Of those that did write 5825× a surprising number went on to find either 5/2 × 8/5 (a confusion with division) or 25/10 × 16/10 = 400/10 (a confusion with addition)

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. 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.

E5. **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.

E6. Once again a surprising number of candidates could not apply the appropriate arithmetical skills correctly. The major problem came with 16 × £1.50 with many candidates failing to see that the most direct way of working this out was to do 16 + half of 16. Some candidates were confused by the context and worked out one fifth of 15 and then used that answer in various inventive ways. Others found one fifth of 20 as 4 and then used that to get £6 as the profit, in this case ignoring most of the information given in the question. Many failed to complete the final step of the question which was performing a subtraction to calculate the profit.

E7. A standard, context free fraction multiplication with no cancelling required. As with question 1 there was a great deal of evidence pointing to poor arithmetical as well as conceptual/ process skills. The major error was where the multiplication process is confused with addition, so the candidates write $\frac{12}{20} \times \frac{5}{20}$,making the denominators the same and then go on to work this out as $\frac{60}{20}$ or 3. (Of course, $\frac{60}{400}$ was an acceptable answer). Further common wrong answers were $\frac{17}{20}$ from adding the numerators of the equivalent fractions and $\frac{4}{20}$ from possibly 3 × 1 = 4, or from simply multiplying the denominators of the original fractions and adding the numerators. Some clearly confused the methods required for multiplication and division and turned the second fraction upside down before multiplying to reach $\frac{12}{5}$ A few candidates replaced the fractions by decimals. They were allowed full marks on a correct decimal answer.

E8. This question was not done well. More than two thirds of the candidates scored 0 marks in this question. By far the most common incorrect approach was to simply add the numerators and add the denominators to get 4/12. A significant number of those candidates using the tabular approach got confused somewhere in their method.

E9. **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 "3·4²" or "2·6²". 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 "3·4 – 2·6" rather then "3·4² – "2·6²". 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 3·4² and 2·6².

E17. 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.

E18. Part (a) was answered very well. Many candidates worked out that 4 stamps could be bought for £1 so therefore 12 could be bought for £3 and some showed division of 300 by 25. Some made simple mistakes such as 5 stamps for £1, leading to an answer of 15, or 4 for £1, 8 for £2 so 16 for £3. Common incorrect methods were 25 ÷ 3 and 25 × 3. Part (b) was answered less well but nevertheless more than half of the candidates were able to give the correct expression. A common incorrect answer was x^3. Some candidates, not appreciating that an expression was required, wrote $x = 3x$ which gained no credit. In part (c) the correct answer was seen less often. Many incorrect expressions had 5 being multiplied by x rather than added to it and some candidates added 5 to Barry's amount rather than to Adam's amount.

E19. **Foundation**

This multiplication was attempted by a wide variety of methods with just under half of the candidates gaining full marks. Those who broke the calculation up into 10 × 5.40 + 10 × 5.40 + 45.40 were often successful. For those using the traditional long multiplication method the most common mistake was in place value (omission of the 0). Partitioning methods were very popular but many candidates were confused by the £ and p. Often they worked with 5 and 40 and tried to incorporate place value at the end. A common wrong answer was £216, from working out 5 × 24 (= 120) and 4 × 24 (= 96) and then adding. Incorrect multiplication by zero (2 × 0 = 2 and 4 × 0 = 4) was a mistake common to several methods. Some weaker candidates listed £5.40 24 times and attempted to add, usually unsuccessfully. A significant number of candidates seemed not to have considered the reasonableness of their answer and it was a shame that many candidates produced working that was very difficult for examiners to follow.

Higher

This question was done well by most candidates. Partitioning and grid methods were as popular as the traditional approach to multiplying numbers. If a candidate lost a mark on

this question it was more likely to be as a result of arithmetic error than an incorrect placement of the decimal point. A small number of candidates treated a multiplication by 0 as a multiplication by 1.

E20. Only just under 40% of candidates were able to attain full marks for this very early question. Marks were generally lost due to an inability to use a calculator correctly. Taking the square root of just the numerator rather than the whole fraction was the most common error.

E21. 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).

E22. 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.

E23. 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.