Q1. There are some pens in a box.
The pens are red, blue, green or black.

The table shows the percentage of red, blue and green pens in the box.

Colour of pen	Percentage
Red	23 %
Blue	32 %
Green	10 %
Black	

Work out the percentage of black pens in the box.

..... %

(Total 2 marks)

Q2. (a) Change $\frac{1}{4}$ to a decimal.

.....

(1)

(b) Find 10% of £50.

£ .....

(1)

(Total 2 marks)

Q3. Kaz buys a car.
The normal price of the car is £7200

Kaz gets a 10% discount.

(i) Work out 10% of £7200

£ .....

(ii) Work out how much Kaz pays for the car.

£ .....

(Total 3 marks)

Q4. (a) Write $\frac{9}{10}$ as a decimal.

.....

(1)

(b) Write $\frac{3}{4}$ as a percentage.

..... %

(1)

(c) Write 23% as a fraction.

.....

(1)

(d) Work out $\frac{1}{5}$ of 50

.....

(1)

(Total 4 marks)

Q5. (a) Write 25.2 to the nearest whole number.

.....

(1)

(b) Write $\frac{1}{5}$ as a decimal.

.....

(1)

(c) Write 27% as a fraction.

.....

(1)
(Total 3 marks)

Q6. There are 200 people in a cinema.

25% of the people are men.

$\frac{1}{5}$ of the people are women.

The rest of the people are children.

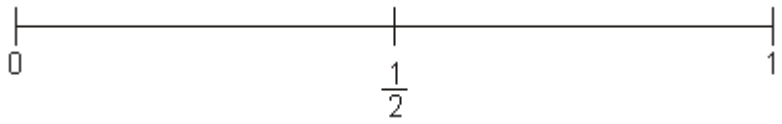
Work out how many children are in the cinema.

.....

(Total 3 marks)

Q7. Liam rolls an ordinary dice.

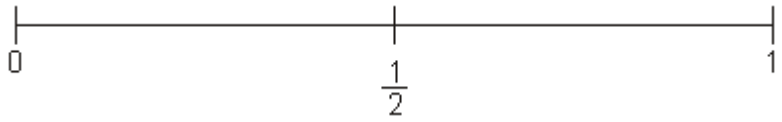
(a) On the probability scale below, mark with a cross ( ) the probability that he gets a number less than 7.



(1)

A bag contains 3 blue counters and 1 red counter.
Kenneth takes at random one counter from the bag.

(b) On the probability scale below, mark with a cross (✕) the probability that he takes a red counter.



(1)

Terry spins a coloured spinner.
The probability that the spinner will land on green is 0.25

The probability that the spinner will land on yellow is 0.35

(c) (i) Write 0.25 as a fraction.

.....

(1)

(ii) Write 0.35 as a percentage.

.....

(1)

A weather forecaster says that the probability it will rain tomorrow is *s*.

(d) Write down, in terms of *s*, the probability that it will **not** rain tomorrow.

.....

(1)
(Total 5 marks)

Q8. (a) Work out the square of 3

.....

(1)

(b) Work out the value of 2^6

.....

(1)

(c) Write 80% as a fraction.
Give your answer in its simplest form.

.....

(2)

(d) Work out 10% of £320

£ .....

(2)

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

$\frac{2}{5}$ 45% 0.35 $\frac{3}{8}$

.....

(2)
(Total 8 marks)

Q9. (a) Write 92% as a decimal.

.....

(1)

(b) Write 3% as a fraction.

.....

(1)

(c) Work out 5% of 400 grams.

..... grams

(2)
(Total 4 marks)

Q10. Work out 28% of £85 000

£ .....

(Total 2 marks)

Q11. A television reporter did a survey.
She asked people to name their favourite sport.
The table gives some information about the answers she got.

Favourite Sport	Percentage
Football	30 %
Cricket	14 %
Hockey	9 %

Snooker	8 %
Tennis	4 %
Other	.....

(a) Complete the table.

(1)

(b) Write down the percentage of people who said snooker.

..... %

(1)

(c) Write 30% as a fraction.
Give your answer in its simplest form.

.....

(2)

(d) Write 9% as a decimal.

.....

(1)

2000 people took part in the survey.

(e) Work out the number of people who said cricket.

.....

(2)

40 people said golf.

(f) Work out 40 out of 2000 as a percentage.

..... %

(2)
(Total 9 marks)

Q12. (a) Work out 50% of £60

£ .....

(1)

(b) Work out 25% of 20 metres.

..... metres

(1)
(Total 2 marks)

Q13. Chris owns a clothes shop.
He bought 50 shirts at £12 for each shirt.
He chose the selling price of each shirt so that he would make a profit of 30% on each shirt.
He sold 20 shirts at this price.

Chris then reduced the selling price of each shirt by 15%.
He then sold the remaining shirts at this reduced selling price.

Has Chris made a profit or loss?
You must explain your answer clearly.

(Total 8 marks)

M1.

Working	Answer	Mark	Additional Guidance
100 – (23 + 32 + 10) = 100 – 65	35	2	**M1** for 100 – (23 + 32 + 10) o.e. **A1** cao watch for answer only in table
			Total for Question: 2 marks

M2.

	Answer	Mark	Additional Guidance
(a)	0.25	1	**B1** cao
(b)	5	1	**B1** cao
			Total for Question: 2 marks

M3.

	Working	Answer	Mark	Additional Guidance
(i)	$\frac{10}{100}$ × 7200	720	2	**M1** for $\frac{10}{100}$ × 7200 oe **A1** (accept 720.00 or 720.0)

(ii)	7200 – 720	6480	1	**B1** ft from (i) for 7200 – '720'
				Total for Question: 3 marks

M4.

	Answer	Mark	Additional Guidance
(a)	0.9	1	**B1** for 0.9
(b)	75	1	**B1** for 75 cao
(c)		1	**B1** for $\frac{23}{100}$ o.e.
(d)	10	1	**B1** for 10 cao
			Total for Question: 4 marks

M5.

	Answer	Mark	Additional Guidance
(a)	25	1	**B1** for 25 cao
(b)	0.2	1	**B1** for 0.2 cao
(c)	$\frac{27}{100}$	1	**B1** for $\frac{27}{100}$ cao
			Total for Question: 3 marks

M6.

Working	Answer	Mark	Additional Guidance
$\frac{25}{100}$ × 200 = 50 $\frac{1}{5}$ × 200 = 40 200 – 50 – 40 OR 25 + 20 = 45 100 – 45 = 55 $\frac{55}{100}$ × 200 OR $\frac{1}{4}+\frac{1}{5}=\frac{5}{20}+\frac{4}{20}=\frac{9}{20}$ $\frac{11}{20}$ × 200	110	3	**M1** for $\frac{25}{100}$ × 200 or 200 ÷ 4 (= 50) or $\frac{1}{5}$ × 200 or 200 ÷ 5 (= 40) **M1** (dep) for 200 – '50' – '40' OR **M1** for 25 + "20" (= 45) or 100 – "45" or $\frac{"45"}{100}$ × 200 (= 90) **M1** (dep) for $\frac{"55"}{100}$ × 200 or 200 – $\frac{"45"}{100}$ × 200 OR **M1** for $\frac{1}{4}+\frac{1}{5}$ or $\frac{"9"}{20}$ or $\frac{"9"}{20}$ × 200 (= 90) **M1** (dep) for $\frac{"11"}{20}$ × 200 or 200 – $\frac{"9"}{20}$ × 200 **A1** cao
			Total for Question: 3 marks

M7.

	Working	Answer	Mark	Additional Guidance

(a)		Cross at 1	1	**B1** for cross at 1 (allow ±2 mm tolerance)

(b)			1	

(c)(i)		$\frac{1}{4}$	2	
(ii)		35		

(d)		$1 - s$	1	**B1** cao
				Total for Question: 5 marks

M8.

	Answer	Mark	Additional Guidance
(a)	9	1	**B1** cao
(b)	64	1	**B1** cao
(c)	$\frac{4}{5}$	2	**B2** for 4/5 (**B1** for 80/100 oe or 0.8)
(d)	£32	2	**M1** for 10/100 × 320, or 320 ÷ 10 **A1** cao NB: £320-£32=£288 or £320+£32=£352 can be awarded **M1** **A1**, but £288 or £352 without working award **B1**
(e)	0.35, 3/8 2/5, 45%	2	**B2** all correct, or for equivalents in order: 0.35, 0.375, 0.4, 0.45, or for a mixture of equivalents as long as the order is correct. (**B1** one error of misplacing numbers, or correct conversion to decimals or %, or correct order but reversed). NB: accept 0.38 or 0.37 instead of 0.375 for **B1**, but not **B2**
			Total for Question: 8 marks

M9.

	Working	Answer	Mark	Additional Guidance
(a)		0.92	1	**B1** for 0.92 cao
(b)		$\frac{3}{100}$	1	**B1** for $\frac{3}{100}$ cao 100
(c)	$\frac{5}{100} \times 400$	20	2	**M1** for $\frac{5}{100} \times 400$ oe **A1** for 20 cao
				Total for Question: 4 marks

M10.

Working	Answer	Mark	Additional Guidance
$\frac{28}{100} \times 85000$	23800	2	**M1** for $\frac{28}{100} \times 85000$ oe **OR** a complete method, allow one arithmetic error **A1** cao
			Total for Question: 2 marks

M11.

	Working	Answer	Mark	Additional Guidance

(a)		35%	1	**B1** cao (accept 35)
(b)		8	1	**B1** cao
(c)	$\frac{30}{100}$	$\frac{3}{10}$	2	**M1** for $\frac{30}{100}$ or $\frac{15}{50}$ or $\frac{6}{20}$ or 0.3(0) seen **A1** cao
(d)		0.09	1	**B1** cao
(e)	$\frac{14}{100} \times 100$	280	2	**M1** for $\frac{14}{100} \times 100$ oe **A1** cao NB: 280% gets **M1 A0**
(f)	$\frac{40}{2000} \times 100$	2	2	**M1** for $\frac{40}{2000} \times 100$ oe **A1** cao
				Total for Question: 9 marks

M12.

	Answer	Mark	Additional Guidance
(a)	30	1	**B1** for 30
(b)	5	1	**B1** for 5
			Total for Question: 2 marks

M13.

	Working	Answer	Mark	Additional Guidance
QWC **i, ii, iii**	50 shirts at £12 each = £600 Selling Price for profit of 30% = £12 × 1.3 = £15.60 20 shirts at £15.60 = £312 Reduced selling price = £15.60 × 0.85 = £13.26 30 shirts at £13.26 = £397.80 £397.80 + £312 > £600	Yes, together with appropriately set out working which supports answer	8	**B1** for price of 50 shirts **M1** for £12 × 1.3 **A1** for £15.60 **A1** for 20 shirts = £312 **M1** for £15.60 × 0.85 **A1** for £13.26 **A1** for 30 shirts = £397.80 **C1** Yes stated together with a statement which supports the correct answer **QWC: With clear working attributed correctly**
				Total for Question: 8 marks

E1. This question too was well understood with 81% candidates obtaining fully correct solutions and a further 2% scoring 1 mark, usually for attempting to subtract their total for red, blue and green from 100.

E2. Fractions often cause a lot of problems on a foundation paper but 50% of candidates were able to write ¼ as 0.25 and there was even more success with percentages where 71% of candidates were able to write 10% of £50 as £5.

E3. Working out 10% of £7200 in part (a) led to £720 in many cases.

However, it is important to stress the importance of reading the question carefully as it was not unusual to see the amount given as £6480 as the answer to part (a) … this being the answer to the second part of the question. £72 as the answer also appeared representing 1% of the sum rather than the required 10%. A follow through in part (b) allowed for an earlier error in the calculation not to be penalised twice. Just under 20% failed to score on this question and around 50% scored all 3 marks. Many candidates wrote the same answer in both parts, generally £720 or £6480

E4. Conversions involving fractions, decimals and percentages were not as well handled as would be expected for the opening question with around two-thirds of the candidates having success on each part except for part (c) which only had a 57% success rate.

Practice might have eliminated some misunderstandings of the type '$\frac{9}{10}$ = 9.10', '$\frac{3}{4}$ = 34%' and '23% = $\frac{2}{3}$'.

E5. The first part of the first question on the paper was answered well with a success rate of over 80%. “26” was the most frequently seen incorrect response. Parts (b) and (c) provided more of a challenge. In part (b) only about one quarter of candidates could give a correct answer. The incorrect answer “0·15” was more commonly seen. In part (c) the fraction “$\frac{2}{7}$ “ was seen almost as often as the correct answer “$\frac{27}{100}$ “. Here, just over a half of candidates were awarded the mark available.

##

Most candidates were able to gain some credit in this question, usually for correctly calculating 25% of 200 Having established an answer of 50 men, many candidates then went on to work out one fifth of 150 (200 – 50), giving an answer of 30 women. If a final answer of 120 (200 – 50 – 30) followed, 2 out of the 3 marks were awarded.

A few candidates worked in percentages giving a final answer of 55%. This gained one mark only; they were required to find 55% of 200 to gain further credit. An even smaller number of candidates worked in decimals, usually unsuccessfully.

E8. The success rate in parts (a) & (b) in this question was related to that of question 2(ii), about half the candidates gaining the mark, with many lacking an understanding of square numbers or indices. In part (c) most were able to express the fraction as 80/100, but of these half were then unable to cancel the fraction into its simplest form.

Candidates used a variety of methods in part (d), with many realising that a division by 10, or “10p in the £” would lead to the correct answer.

Candidates found part (e) far more challenging. The most successful method appeared to be conversion to decimals.

E9. Part (a) was answered with the most success with two thirds of candidates able to write 92% as 0.92. The most common incorrect answer was 9.2. It was disappointing that in part (b) fewer than half of the candidates could write 3% as 3/100. The most common incorrect answers were 1/3 and 3/10. Part (c) was answered quite well and successful candidates often used the standard non-calculator method of finding 10% first. Some worked out 50% = 200 and 25% = 100 but then got stuck. Where the traditional method of 5/100 × 400 was seen candidates usually struggled to proceed any further with the calculation. A common incorrect method was for 400 to be divided by 5. Unfortunately many candidates showed no method at all.

E10. This question had over 40% success rate. Relatively few were able to write 28 ÷ 100 × 85000 to access the method mark and then use the calculator to find the correct answer. Many tried to break the question down into parts but then went wrong at the first hurdle when attempting to find 10% of 85000, often writing this as 850 without any working. Those that did find 10% correctly often had difficulty in using this as a starting point to find 28%. Finding 5% was generally correct but the extra 3% proved a problem for many candidates.

E11. There were mostly correct answers seen in parts (a) and (b).

In part (c) the majority of the candidates could access at least one of the marks by writing 30/100 or 15/30 or another equivalent fraction. It was disappointing to note how many wrote the correct answer of 3/10 but then cancelled this further to get 1/3, which meant they lost the final accuracy mark. Candidates should be encouraged to show their equivalent fractions along the way as many just wrote 1/3 as their final answer, which meant they scored no marks.

In part (d) those who knew percentage meant “out of a hundred” were generally successful with just over ½ the candidates getting this correct. The incorrect answers of 0.9 and even 9.0 were frequently seen.

Part (e) was quite well done although a surprising number clearly did not use a calculator

for this computation. Nearly ½ the candidates got this fully correct. Errors in breaking down 14% into 10%, 1% etc were either arithmetic or were not combined correctly. A significant number of candidates divided 2000 by 14 or used 200 rather than 2000. Candidates who knew the traditional method of 14/100 × 2000 were largely successful.

Most candidates had difficulties with part (f). Some correct answers were obtained from 40 ÷ 2000 × 100 whilst other correct answers were found by a comparison of 10% of 2000 = 200 with 40 and scaling down accordingly. Some candidates simply stated the answer without any working. The most common incorrect attempts were to calculate 40% of 2000 or to subtract 40 from 2000.

E12. Specification A

Candidates clearly understood that 50% is equal to one half and were able to correctly find a half of £60 in part (a). In part (b), whilst knowing that 25% is equal to one quarter, there were a significant number of arithmetic mistakes in dividing 20 by 4; an answer of 4 was a common error.

Specification B

Part (a) was done well by virtually all the candidates. Part (b) was done well by most candidates. Many realised that they needed to find a quarter of 20, but some were unable to do this accurately. Of the few candidates that showed any working in this question, a popular approach was to divide 20 by 2 and then divide their answer by 2 again.