

1. Find 20% of 450.

(c) _____ [2]



2. Charlie, Mo and Andrzej share a flat.

- Charlie pays 25% of the rent.
- Mo pays $\frac{1}{2}$ of the rent.
- Andrzej pays £450.

How much do they pay altogether for the rent?

£ _____ [4]

3. Tony is making a journey of 180 miles.
He stops after 36 miles.

What percentage of the journey has he completed?

----- %

[2]

4. In a survey of 209 people at a supermarket, 83% said that the fruit being sold was of excellent quality.

How many of the 209 people could have said that the fruit was of excellent quality?

----- [3]



5. Work out.

30% of 520

----- [2]

6. Write 0.45 as a percentage.

----- % [1]

7. In 2011, Greenmeadows Tennis Club had 25 members and in 2012 it had 31 members.

Calculate the percentage increase in the number of members.

----- % [3]

8(a). Complete this table of equivalent fractions, decimals and percentages.

Fraction		Decimal		Percentage
$\frac{1}{2}$	=	0.5	=	
$\frac{3}{4}$	=		=	
	=		=	97%
	=	0.03	=	

[4]

(b). Work out.

76% of 480

----- [2]



9. Complete this table of equivalent fractions, decimals and percentages.

Fraction		Decimal		Percentage
	=	0.37	=	37%
$\frac{1}{5}$	=	0.2	=	
$\frac{1}{4}$	=		=	
	=		=	7%

[4]



10. Work out.

(i) 10% of 270

(i) ----- [1]

(ii) 5% of 270

(ii) ----- [1]



11(a) Work out.

(i) $627 + 304$

(i) [1]

(ii) 47×100

(ii) [1]

(iii) $9.6 \div 4$

(iii) [2]

(iv) 35% of 80

(iv) [2]



(b) Write down

(i) 75% as a fraction,

(i) [1]

(ii) $\frac{3}{5}$ as a decimal.

(ii) [2]

12. Work out 17% of 54.
Give your answer correct to 1 decimal place.

----- [3]

13. The pass mark for a test is 86%.
Steve scores 52 out of 61 marks.

Does he pass the test?
Explain your answer.

----- [2]



14. Lillian works 7 hours each day for 5 days a week.
She earns £420 each week.

Lillian decides that she is going to work 7 hours each day for **only 4 days** a week.
Her earnings are to be reduced by 20%.
Lillian thinks that this reduction is reasonable.

- (i) Explain why a reduction of 20% is reasonable.

----- [1]

- (ii) How much will Lillian earn working 4 days a week?

£ ----- [2]



15(a) Complete this table of fractions, decimals and percentages.

Fraction		Decimal		Percentage
$\frac{1}{2}$	=	0.5	=	50%
	=	0.27	=	
$\frac{4}{5}$	=		=	
	=		=	3%

[3]



(b). Write 45% as a fraction in its simplest form.

----- [2]



16(a)

Write 62 as a percentage of 500.

----- % [1]



(b). Increase £196 by 9%.

£ ----- % [3]



17. Jack carries out a survey in his school.

He selects 50 students, at random, and asks them

Do you think that it is a good idea to have women-only railway carriages?

These are his results.

	Number of students
Yes	32
No	13
Don't know	5

What percentage of the students in Jack's survey answered 'Yes'?

----- % [3]

END OF QUESTION PAPER

Question			Answer/Indicative content	Marks	Part marks and guidance	
1			90	2	M1 for 10% = 45 soi or M1 for 450×0.2	
			Total	2		
2			[£]1800	4	M1 for $\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$ soi M1 for $\frac{1}{4}$ (of the rent) = 450 M1 for 450×4	oe using percentages or decimals
			Total	4		
3			20	2	M1 for $36 \div 180$ Or B1 for 0.2 oe	Examiner's Comments Proved to be more of a challenge where only a few candidates gained both marks. Responses often appeared with no supporting work sometimes seemingly at random. Among the most common incorrect answers were 5 (from $180 \div 36$) and 64.8% (from $36/100 \times 180$).
			Total	2		
4			173 or 174	3	B2 for answer 173.4 to 173.5 Or M1 for 0.83×209 oe soi Examiner's Comments There were some correct answers following a correct calculation and correct rounding. Some used 'pencil and paper' percentage methods, often leading to errors. A number did not understand how to find 83% of 209.	Condone For M1 0.17×209 oe soi
			Total	3		

Question			Answer/Indicative content	Marks	Part marks and guidance	
5			156	2	<p>M1 for 0.3×520 or B1 for $[10\% =] 52$ or for 156% or figs 156 as answer Or 364 as answer with 156 seen</p> <p>Examiner's Comments</p> <p>By far the most common (and successful) approach was to break the problem down into parts consisting of 10% giving 3×52. Errors in this method usually revolved around a failure to sum the parts correctly. Some did attempt a more formal approach but either couldn't cope with the division and multiplication or confused the operations for the 30 and 100.</p>	
			Total	2		
6			45	1	<p>Examiner's Comments</p> <p>A small number gave the answer as 4.5. The correct answer was often seen.</p>	
			Total	1		

Question		Answer/Indicative content	Marks	Part marks and guidance	
7		24	3	<p>M2 for $(\frac{31}{25} - 1) \times 100$ oe</p> <p>or</p> <p>M1 for $\frac{31 - 25}{25}$ or $\frac{6}{25}$ oe or $\frac{31}{25}$ or 1.24</p> <p>oe and</p> <p>M1 for $\frac{\textit{their } 6}{25} \times 100$</p> <p>or</p> <p>SC2 for answer of 124 or</p> <p>SC1 for answer 19.3... or 19.4</p> <p>Examiner's Comments</p> <p>Very few candidates knew how to calculate a percentage increase and most had an incorrect answer. Almost all candidates identified 6 as being an essential component of the process, but then showed no indication that they knew what to do with this value, either leaving their answer as 6%, or using the value in a number of incorrect ways. Several used 31 as the original amount, rather than 25.</p>	<p>e.g. $(\frac{31}{25}) \times 100 - 100$</p> <p>not $\frac{6}{31}$</p>
		Total	3		

Question		Answer/Indicative content	Marks	Part marks and guidance	
8	a	$\frac{1}{2} = 0.5 = 50\%$ $\frac{3}{4} = 0.75 = 75\%$ $\frac{97}{100} = 0.97 = 97\%$ $\frac{3}{100} = 0.03 = 3\%$	4	<p>B1 for each correct line Following B0 B0 for last two lines SC1 for two correct values seen on last two lines.</p> <p>Examiner's Comments</p> <p>The table showing equivalence between fractions, decimals and percentages was understood well by candidates with many scoring well. Nearly all completed the equivalences for one half and three quarters successfully. Some candidates could not find the fraction equivalences to 97% and 0.03. Common errors for the latter were 3/10 or 3/1000.</p>	

Question		Answer/Indicative content	Marks	Part marks and guidance	
	b	364.8[00...] or 365	2	<p>Mark final answer M1 0.76×480 oe Or SC1 for answer of 364 or answer of 364.8% or 365%</p> <p>Examiner's Comments</p> <p>Most candidates showed some understanding of percentages when answering this question. Those who chose to use their calculators to find 0.76×480, quickly obtained the correct response. Many, though, used a method that was more appropriate on a non-calculator paper, by finding 50%, 25% and 1% for instance. Some obtained the correct answer by using such a technique, but others made errors and consequently lost marks. Candidates would benefit from being aware of the first method, not only to facilitate answering questions of this type but also to answer questions of a more demanding nature involving percentage increase and decrease.</p>	<p>For non calculator method eg finding 10% and 1% then finding $7 \times 10\% + 6 \times 1\%$ 10% (48) and 1%(4.8) must be correct and method must be clear, complete and correct for M1 Sight of 336 will imply 7×48 etc</p>
		Total	6		

Question		Answer/Indicative content	Marks	Part marks and guidance	
9		$\frac{37}{100}$	1		
		20[%]	1		
		0.25 and 25[%] $\frac{7}{100}$ and 0.07	2	B1 for two of these Examiner's Comments Candidates attempted this question with varying degrees of success. Some showed a good knowledge of the relationships with fractions, decimals and percentages. Others knew how to convert between decimals and percentages, but had little idea how to connect these to fractions. Most were able to gain at least some credit for filling in the more straightforward conversions.	
		Total	4		
10	i	27	1		
	ii	13.5 oe	1	FT from <i>their</i> 27 Not strict FT Examiner's Comments Nearly all candidates demonstrated skills in finding percentages without the aid of a calculator and half of the candidates obtained all five marks for fully correct solutions. Most candidates were able to find 10% and 5% of 270.	
	ii				
		Total	2		

Question			Answer/Indicative content	Marks	Part marks and guidance	
11	a	i	931	1		
		ii	4700	1		
		iii	2.4 oe	2	M1 for attempt to divide Or figs 24 as answer	
		iv	28	2	<p>M1 attempt at complete method allow 1 arithmetic error ft their first percentage SC1 52 as final answer</p> <p>Examiner's Comments</p> <p>Part (i) was usually correct. (ii) Often correct but 470 and 47 000 were common incorrect answers. Most candidates attempted part (iii) with varying degrees of success, with many failing to put the carry figure in front of the 6, some thought 4 went into 9 once so carried over 5. It was disappointing to see some candidates giving answers with remainders. In (iv) there often was a lack of strategy to handle the arithmetic, many tried to find 1% first, when finding 10% would have been better. Working was often incomplete with correct amounts shown for 10% and 5% but no attempt made to add them.</p>	
	b	i	$\frac{75}{100}$ oe isw	1		must be fraction

Question			Answer/Indicative content	Marks	Part marks and guidance	
		ii	0.6	2	<p>M1 for $3 \div 5$ oe</p> <p>Examiner's Comments</p> <p>This had several candidates not reading the question carefully and giving their answer in an incorrect form. In (i) most candidates who gave a fraction scored the mark, 0.75 and $\frac{7}{5}$ were frequently seen. (ii) was less well answered, very few candidates attempted to divide 3 by 5. Some moved to $\frac{6}{10}$ but were still unable to carry out the division. 3.5 and 0.35 were common incorrect responses.</p>	
			Total	9		
12			9.2	3	<p>M1 for 0.17×54 oe</p> <p>A1 for 9.18</p> <p>If 0 scored</p> <p>SC1 for <i>their</i> answer rounded to 1dp, if two dp or more seen.</p>	<p>Allow fully correct non calculator method for 1 mark allow 1 error in addition</p>
			Total	3		

Question		Answer/Indicative content	Marks	Part marks and guidance	
13		No he has scored 85[.2%] or no he needs at least 52.46 (52.5/53) to pass oe	2	<p>M1 for $52 \div 61$ or $52 \div 0.61$ soi by 0.85[2...] or 85[.2%] .. or 0.86×61 soi by 52.46 or 52.5 or 53</p> <p>Examiner's Comments Many candidates scored 1 mark for a correct calculation, usually $52 \div 61$ leading to either 0.852 or 85.2%, or for $0.86 \times 61 = 52.46$. The most successful were those who worked out 85%, with almost all then giving a correct interpretation. Many who arrived at 52.46 said that this rounds to 52 and stated he passed, losing a mark. A few compared the 9 marks he lost with 14% and some stated that because he got over half marks he had passed.</p>	
		Total	2		
14	i	20% is one day oe	1	Or $20\% = \frac{1}{5}$	See Appendix B
	ii	336	2	<p>M1 for 420×0.8 oe or $420 - 84$ or <i>their</i> $12 \times 7 \times 4$ oe</p>	
		Total	3		

Question		Answer/Indicative content	Marks	Part marks and guidance
15	a	$\frac{27}{100}$ 27 [0].8[0] 80 $\frac{3}{100}$ [0].03	3	<p>B1 for each row</p> <p>Examiner's Comment Many good answers were seen to this part, although completing the column of fractions was a notable challenge. A common error was to think that 3% was equal to 0.3, or $\frac{3}{10}$, or $\frac{1}{3}$.</p> <p>Another error was $\frac{4}{5} = 0.45$.</p>
	b	$\frac{9}{20}$ final answer	2	<p>B1 for $\frac{45}{100}$ or equivalent fraction</p> <p>Examiner's Comment In this part, the correct answer was often given, although many could not cancel $\frac{45}{100}$ correctly.</p>
		Total	5	

Question		Answer/Indicative content	Marks	Part marks and guidance	
16	a	12.4	3	<p>M2 for $62 \div 500 \times 100$ or OR M1 for $62 \div 500$</p>	
				<p><u>Examiner's Comments</u></p> <p>There were many correct answers to part (a), however in some cases, candidates' attempts showed no real insight into what they were being asked to do. Attempts to find 62% of 500 were very common, as were non-calculator methods. Those candidates who recognised the need to evaluate usually went on to score full marks.</p>	

Question		Answer/Indicative content	Marks	Part marks and guidance	
	b	213.64	3	<p>M2 for 1.09 × 196 oe OR M1 for 0.09 × 196 oe soi by 17.64</p> <p>If non calculator method, it must be fully correct</p> <p>Examiner's Comments</p> <p>Part (b) was often attempted using a two-step method: finding 9% of 196 and then adding the result to 196. Those who did this using an efficient calculator method were far more successful than those who attempted non-calculator methods. The non-calculator methods seen, usually involved attempts at finding 10%, then 1%. Many had difficulty evaluating 10% and 1% of 196 correctly, those who did manage this step were often unable to combine their results to obtain 9%, some did correctly find 9% but left the answer as £17.64 scoring only 1 of the 3 marks.</p>	
		Total	6		

Question			Answer/Indicative content	Marks	Part marks and guidance	
17			64	3	B2 $\frac{64}{100}$ for or $\frac{32}{50}$ B1 for or M1 for $32 \div 50 \times$ 100 oe	
			Total	3		