



1. Find $\frac{1}{4}$ of 16.

----- [1]



2(a). Simplify fully.

$$\frac{12}{30}$$

[1]



(b). Write this improper fraction as a mixed number.

$$\frac{23}{6}$$

[1]



(c). Work out.

$$\frac{3}{7} + \frac{1}{2}$$

[2]



3(a). Work out.

$$\frac{1}{2} \times \frac{1}{8}$$

----- [1]



(b). Work out.

$$\frac{1}{2} + \frac{1}{8}$$

----- [2]



(c). Work out.

$$\frac{1}{2} \div \frac{1}{8}$$

----- [2]



4. Work out.

(i) $\frac{3}{4}$ of 12

(i)..... [1]

(ii) $6 \times \frac{1}{6}$

(ii)..... [1]

5. Write 12 out of 20 as a fraction.
Give your answer in its simplest form.

..... [2]

6. Complete this multiplication grid by filling in the shaded squares.

\times	$\frac{1}{6}$	
$\frac{1}{5}$		1
	$\frac{1}{16}$	

[4]

7. Pam has two cats, Tibbs and Fluff.

Tibbs is fed $\frac{1}{4}$ of a tin of cat food, 3 times a day.

Fluff is fed $\frac{1}{3}$ of a tin of cat food, 2 times a day.

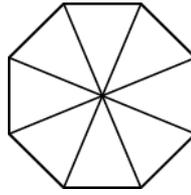
Pam has 13 tins of cat food.

How many days will the cat food last?

----- [4]



8(a). Shade $\frac{1}{4}$ of this shape.



[1]



(b). Pierre has 36 sweets. He gives $\frac{2}{3}$ of his sweets to his sister.

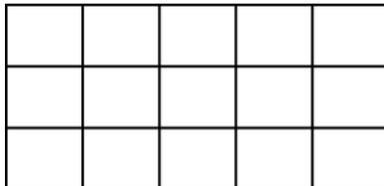
How many sweets does Pierre give to his sister?

----- [2]

9(a). Work out $\frac{3}{8}$ of 96.

----- [2]

(b). Shade $\frac{1}{5}$ of this shape.



[1]

10. Write $3\frac{2}{7}$ as an improper fraction.

----- [1]

11. Work out, giving your answer as a fraction.

(i) $\frac{1}{2} + \frac{1}{4}$

(i) ----- [1]

(ii) $\frac{5}{7} - \frac{1}{14}$

(ii) ----- [2]

12. Sam has these number cards.



Complete the following using Sam's number cards.

$$\frac{16}{40} = \frac{2}{\boxed{}}$$

[1]

13(a) Work these out, giving your answers as fractions.

(i) $\frac{3}{5} \times \frac{1}{4}$

(i) [1]

(ii) $\frac{2}{7} \div 3$

(ii) [1]

(b). Complete this calculation.

$$\frac{1}{3} - \frac{1}{5}$$

$$= \frac{\square}{15} - \frac{\square}{\square}$$

$$= \frac{\square}{\square}$$

[2]



14. Work out.

$$1\frac{3}{4} + 3\frac{5}{12}$$

Give your answer as a mixed number in its simplest form.

----- [3]

15(a) Work out.



$$\frac{3}{8} + \frac{1}{2}$$

----- [2]

(b). Write $\frac{23}{6}$ as a mixed number.



----- [1]

(c). Write $1\frac{5}{8}$ as an improper fraction.



----- [1]

(d). Work out.



$$5\frac{3}{5} - 2\frac{1}{6}$$

----- [3]



16(a)

Work out.

(i) $6\frac{1}{2} + \frac{3}{4}$

----- [1]

(ii) $\frac{4}{7}$ of 63

----- [2]



(b). Find a fraction which is bigger than $\frac{1}{5}$ and smaller than $\frac{1}{4}$.

----- [2]



17.

Work out $\frac{2}{15} \times \frac{15}{22}$.

Give your answer in its lowest terms.

----- [2]

18(a)

Work out $\frac{2}{7} + \frac{1}{7}$.

----- [1]

(b).

The fraction $\frac{n}{16}$ is between $\frac{1}{4}$ and $\frac{1}{2}$,

Write down all the possible values of n .

----- [2]

END OF QUESTION PAPER

Question			Answer/Indicative content	Marks	Part marks and guidance
1			4	1	
			Total	1	
2	a		$\frac{2}{5}$ final answer	1	<p>Examiner's Comments</p> <p>Attempts at simplification often stopped at $\frac{6}{15}$ and a common error was to divide the numerator and denominator by different numbers resulting in $\frac{3}{5}$.</p>
	b		$3\frac{5}{6}$ final answer	1	<p>Examiner's Comments</p> <p>Most candidates made an attempt to write mixed numbers with many identifying the whole number correctly. Obtaining the correct fractional part proved more challenging. Some candidates just flipped the given fraction to $\frac{6}{23}$. Another common error was to transpose the correct 3 figures resulting in answers of $5\frac{3}{6}$.</p>

Question		Answer/Indicative content	Marks	Part marks and guidance
	c	$\frac{13}{14}$ ^{oe}	2	<p>M1 for $\frac{3}{7} = \frac{6}{14}$</p> <p>or $\frac{1}{2} = \frac{7}{14}$</p> <p>or two equivalent fractions with a common denominator where one numerator is correct</p> <p>May be seen in the form</p> <p>eg $\frac{6+5}{14}$ scores M1</p> <p>Examiner's Comments The most common answer was $\frac{4}{9}$ where the candidates had added the given numerators and the denominators. Many are identifying a common denominator; some were not fully converting both numerators and consequently fractions such as $\frac{3}{14}$ as $\frac{1}{14}$ and were seen.</p>
		Total	4	

Question		Answer/Indicative content	Marks	Part marks and guidance	
3	a	$\frac{1}{16}$ oe	1	<u>Examiner's Comments</u> This simple fraction work was beyond many candidates and few marks were scored.	[0].0625 or 6.25%
	b	$\frac{5}{8}$ oe	2	M1 for common denominator <u>Examiner's Comments</u> This simple fraction work was beyond many candidates and few marks were scored.	EG $\frac{\dots}{16}$ [+] [0].625 or 62.5% score 2 marks
	c	4 oe	2	M1 for $[\frac{1}{2}] \times \frac{8}{[1]}$ or $\frac{4}{8} \div \frac{1}{8}$ <u>Examiner's Comments</u> This simple fraction work was beyond many candidates and few marks were scored.	Accept $\frac{8}{2}$ for 2 marks
		Total	5		

Question			Answer/Indicative content	Marks	Part marks and guidance
4		i	9	1	
		ii	1	1	<p>Accept other correct versions e.g. $\frac{6}{6}$</p> <p>Examiner's Comments</p> <p>This was very poorly answered. Many thought that $\frac{3}{4}$ of 12 was 3, or 4, or even 16 and other apparently unrelated answers such as $\frac{11}{17}$.</p> <p>Similarly, few were able to work out $6 \times \frac{1}{6}$ with answers such as common wrong answers being $\frac{6}{36}$ or 6 or 36.</p>
			Total	2	
5			$\frac{3}{5}$	2	<p>B1 for $\frac{6}{10}$</p> <p>Examiner's Comments</p> <p>Well answered. A few did not fully simplify however and left their answer as $\frac{6}{10}$.</p>
			Total	2	

Question	Answer/Indicative content	Marks	Part marks and guidance
6	$- \quad - \quad 5$ $- \quad \frac{1}{30} \quad -$ $\frac{3}{8} \text{ or } \frac{6}{16} \quad -$ $\frac{15}{8} \text{ or } \frac{30}{16} \text{ or } 1\frac{7}{8}$	<p>1</p> <p>1</p> <p>1, 1FT</p>	<p>Condone $\frac{5}{1}$</p> <p>For $\frac{1}{30}$ accept 0.033 or better</p> <p>For $\frac{3}{8}$ accept 0.375</p> <p>For $\frac{15}{8}$ accept 1.875. FT</p> <p><i>their values</i></p> <p>Examiner's Comments</p> <p>For some this was a very straightforward question involving the use of a calculator with fractions. For many others this proved challenging</p> <p>The most common correct answer given was $\frac{1}{30}$.</p> <p>Many did not give the value $\frac{8}{5}$.</p> <p>5. Some had $\frac{3}{8}$ instead of $\frac{3}{8}$.</p> <p>It was often possible to award a follow through mark for the final square on the grid from the product of the candidates' incorrect entries.</p> <p>The question was omitted by a number of candidates.</p>

Question			Answer/Indicative content	Marks	Part marks and guidance	
			Total	4		
7			9	4	<p>B3 for 9.1 to 9.2 oe</p> <p>Or M2 for $13 \div (\frac{2}{3} + \frac{3}{4})$ soi</p> <p>Or M1 for $\frac{2}{3} + \frac{3}{4}$ soi</p> <p>Examiner's Comments</p> <p>The more able candidates scored well and showed clear method before interpreting the final solution. Often, for others, the only mark awarded was for the addition of 2/3 and 3/4. Most then went on to find the product of their fraction and 13. A number used a 'counting on' method. This was usually inefficient and prone to error and using a calculator with the fractions would have led to greater success.</p>	<p>OR Using daily totals</p> <p>B3 for $1\frac{5}{12}$ $2\frac{10}{12}$ $4\frac{3}{12}$ $5\frac{8}{12}$ $7\frac{1}{12}$ $8\frac{6}{12}$</p> <p>$9\frac{11}{12}$ $11\frac{4}{12}$ $12\frac{9}{12}$ oe</p> <p>Or B2 for</p> <p>$1\frac{5}{12}$ $2\frac{10}{12}$ $4\frac{3}{12}$ oe</p> <p>Or B1 for $1\frac{5}{12}$ oe</p> <p>For B1,B2,B3 rot correct to 1dp OR after zero scored</p> <p>SC2 for [Tibbs] [9 days]</p> <p>$6\frac{3}{4}$ tins oe And [Fluff][9 days] 6 tins oe</p>
			Total	4		

Question		Answer/Indicative content	Marks	Part marks and guidance	
8	a	2 sections shaded oe	1	Examiner's Comments This part was generally answered correctly.	
	b	24	1	M1 for $36 \div 3$ or $36 \times 2 \div 3$ oe Examiner's Comments This part was more challenging, with the full range of marks seen. Candidates who scored 0 usually attempted to divide 36 by 2, or employed a strategy of repeatedly halving, showing 18 then 9. Candidates who scored 1 mark often showed an answer of 12, or showed 12 as an intermediate value in their working.	12 implies M1
		Total	3		
9	a	36	2	M1 for $96 \div 8$ Examiner's Comments This was generally correct.	
	b	3 squares shaded.	1	Examiner's Comments This was generally correct.	
		Total	3		
10		$\frac{23}{7}$	1	Examiner's Comments The most common answer was $\frac{6}{7}$.	
		Total	1		

Question			Answer/Indicative content	Marks	Part marks and guidance	
11		i	$\frac{3}{4}$ oe	1	<p>Must be a fraction, isw</p> <p>Examiner's Comments</p> <p>Many candidates appreciated that you need to have a common denominator to add fractions and gave the correct response. A common error was just to add the numerators and denominators and give a response of $\frac{2}{6}$.</p>	
		ii	$\frac{9}{14}$ oe	2	<p>Must be a fraction, isw M1 for $\frac{10}{14}$ oe (from $\frac{5}{7}$) soi Or SC1 for answer of 0.64[2...]</p> <p>Examiner's Comments</p> <p>It was pleasing to see candidates doing better on questions of this type than candidates in the past. The solutions were often not very elegant with candidates using 98ths rather than 14ths, but nevertheless the majority of candidates found a correct solution.</p>	<p>$\frac{63}{98}$ is correct For M1 look for $\frac{70}{98}$</p>
			Total	3		
12			5	1	<p>Examiner's Comments</p> <p>Very well answered. A few gave answers of 6 rather than 5.</p>	
			Total	1		

Question			Answer/Indicative content	Marks	Part marks and guidance	
13	a	i	$\frac{3}{20}$ oe	1	oe fraction	
		ii	$\frac{2}{21}$ oe	1	oe fraction Examiner's Comments This was generally well answered. Many did not use calculators to tackle the fraction questions however and there were some arithmetic errors such as $3 \times 1 = 4$ in the numerator of the first answer.	
	b		$\frac{5}{15} - \frac{3}{15}$ $\frac{2}{15}$	M1 A1	Dep on M1 Examiner's Comments This was answered poorly despite the structure provided in the question. Many could work out the correct answer but without the correct method of converting the two fractions to a common denominator of 15 first.	
			Total	4		

Question		Answer/Indicative content	Marks	Part marks and guidance	
14		$5\frac{1}{6}$ final answer	3	<p>B2 for $5\frac{2}{12}$ or $\frac{62}{12}$ seen</p> <p>or other unsimplified equivalent</p> <p>OR</p> <p>M1 for $1\frac{3}{4}$ converted to</p> <p>$1\frac{9}{12}$ or $\frac{21}{12}$</p> <p>AND</p> <p>M1 for correct addition of <i>their</i> two improper fractions / mixed numbers with common denominator</p> <p>AND</p> <p>M1 for <i>their</i> improper fraction / mixed number correctly converted to a mixed number in its lowest terms</p> <p>max 2 marks if answer incorrect</p> <p>Examiner's Comments</p> <p>Addition of mixed numbers continues to be found difficult. Often their conversion to a common denominator was incorrect, but correct addition or correct cancelling to lowest terms gave some credit. A very common mistake was simply to add the two numerators and denominators to get an</p> <p>answer of $4\frac{8}{16}$.</p>	<p>M1 may be implied by $\frac{3}{4}$</p> <p>converted to $\frac{9}{12}$ but not $3\frac{9}{12}$</p> <p>Or M1 for other conversion to common denominator with at least one correct numerator</p> <p>allow this M1 even if no simplification required</p>
		Total	3		

Question		Answer/Indicative content	Marks	Part marks and guidance	
15	a	$\frac{7}{8}$ oe	2	<p>M1 correct common denominator with 2 numerators</p> <p>Examiner's Comments</p> <p>It was disappointing that many failed to show working leading towards a common denominator, but just added the 2 numbers giving an answer of 4/10</p>	Condone 1 error in numerators
	b	$3\frac{5}{6}$	1	<p>Examiner's Comments</p> <p>Clearly several candidates did not understand the term mixed number, with 23.6 or 6/23 being common incorrect answers.</p>	
	c	$\frac{13}{8}$	1	<p>Examiner's Comments</p> <p>There was again a lack of understanding with 15/8 often seen.</p>	

Question		Answer/Indicative content	Marks	Part marks and guidance	
	d	$3 \frac{13}{30}$ or $\frac{103}{30}$ or any equivalent fraction isw	3	<p>M2 for $\frac{13}{30}$ oe from a subtraction</p> <p>or $\frac{18}{30}$ and $\frac{5}{30}$ oe or $\frac{168}{30}$</p> <p>and $\frac{65}{30}$ oe</p> <p>allow an error in one of the two numerators with a correct common denominator</p> <p>or</p> <p>M1 for any correct attempt to get a common denominator or $\frac{28}{5}$ and $\frac{13}{6}$ oe</p> <p>Examiner's Comments</p> <p>This caused problems for some candidates, many added rather than subtracted but scored 2 marks for the $\frac{13}{30}$. Some realised that they needed a common denominator of 30. Problems were encountered by many candidates in achieving the correct numerator, often having difficulty multiplying 18 by 6.</p>	<p>eg $\frac{36}{60}$ and $\frac{11}{60}$ scores M2</p> <p>eg two fractions with common denominators of a multiple of 6×5</p>
		Total	7		

Question			Answer/Indicative content	Marks	Part marks and guidance
16	a	i	$7\frac{1}{4}$ oe	1	<p>Accept eg</p> $\frac{58}{8}$ ISW <p>Do not accept eg</p> $6\frac{5}{4}$ <p>Examiner's Comments Those who used a correct method often reached $6\frac{5}{4}$ or $6\frac{10}{8}$, but failed to convert to the required answer. A small number of candidates converted the fractions to decimals and added. A correct improper fraction ($\frac{58}{8}$) was seen in (e.g. (a)(i) as frequently $7\frac{1}{4}$. Several candidates were awarded no marks in this question. The main error was adding the numerators and denominators without attempting a common denominator, thus ending up with a wrong $6\frac{4}{6}$. Some candidates change $\frac{13}{2} + \frac{3}{4}$, but here again many just added the numerators and the denominators. The most common and efficient method in (a)(ii) was to divide by 7 and then multiply by 4 and many candidates reached the correct result using this</p>

Question	Answer/Indicative content	Marks	Part marks and guidance
			<p>method. Those who attempted the multiplication first usually made errors. Some candidates made arithmetical errors in attempting to divide 63 by 7. Some who successfully divided 63 by 7 did not go on to multiply by 4 and just gave 9 as their answer. Some candidates evaluated 4×7, giving an answer of 28. While many candidates in (b) attempted to find equivalent fractions with a common denominator, the inclusion of 9 as an initial value made this challenging, especially for those who tried to use 100 as a common denominator. Although very few gave equivalent fractions over a common denominator of 45 this was the most successful method. Those who attempted to convert to decimals or percentages usually gained a $\frac{4}{5}$ conversion mark for the $\frac{7}{9}$ but failed to convert correctly. Candidates who drew sketch diagrams as a comparison or who gave descriptions relating to the value of the denominator being a bigger fraction gained no credit. The most successful method in (c) was to change denominators to 40 or 100, which enabled a fraction between the two to be easily seen (most commonly $\frac{9}{40}$). When $\frac{4}{20}$ and $\frac{5}{20}$ were used this sometimes led to an $\frac{4.5}{20}$. Methods</p>

Question			Answer/Indicative content	Marks	Part marks and guidance
					<p>answer of $\frac{1}{4.5}$ again looked at converting to 0.2 or 20% and 0.25 or 25%, but rarely did this lead to a fraction between the two. Many gave incorrect fraction answers of the form $\frac{1}{x}$ where $x < 5$ or $x > 4$ without any working, although some candidates identified that $\frac{1}{4.5}$ was between the given fractions.</p>
		ii	36	2	<p>M1 for $63 \div 7$ soi</p> <p>Implied by $[\frac{1}{7} \text{ of } 63] = 9$</p> <p>$\frac{63}{7}$ not enough for</p> <p>M1 without 9 or division sign or bus stop eg 7)</p> <p>$\overline{63}$</p>

Question		Answer/Indicative content	Marks	Part marks and guidance		
	b	Any fraction n st $0.2 < n < 0.25$ such as $\frac{9}{40}$	2	M1 for either a fraction equivalent to 0.2 and a fraction equivalent to 0.25 seen , where the denominators or the numerators are the same e.g. $[\frac{1}{5}=] 0.2$ and $[\frac{1}{4}=] 0.25$ seen or n st $0.2 < n < 0.25$ where n not a fraction	Accept equivalent percentages Eg $\frac{4.5}{20}$	
		Total	5			

Question		Answer/Indicative content	Marks	Part marks and guidance	
17		$\frac{1}{11}$ final answer	2	<p>M1 for $\frac{30}{330}$ oe or</p> <p>correct cancelling shown</p> <p>After 0 scored, SC1 for their fraction written in simplest form</p> <p>Examiner's Comments Candidates using the correct rule for multiplying fractions usually reached</p> <p>$\frac{30}{330}$</p> <p>but many could not then simplify this fully, or made errors in their cancelling. There was very little evidence of candidates cancelling the fractions before multiplication, which would have simplified the arithmetic. Confusion with calculating with fractions was again evident, with many candidates either inverting the second fraction before multiplying or attempting to convert to a common denominator before multiplying.</p>	<p>For M1, condone 1 correct stage of cancelling common factors in numerators and denominators</p> <p>SC1 dep on a fraction that reduces</p>
		Total	2		

Question		Answer/Indicative content	Marks	Part marks and guidance	
18	a	$\frac{3}{7}$ o e	1	Accept equivalent $\frac{6}{14}, \frac{21}{49}$ or 0.428 to 0.429 or 42.8% to 42.9%	
	b	5, 6 and 7 cao	2	B1 $\frac{4}{16}$ or $\frac{8}{16}$ for r seen or At least one from 5, 6 or 7 (condone 4 and/or 8 included)	Allow $\frac{5}{16}, \frac{6}{16}, \frac{7}{16}$ for B1
				Examiner's Comments	
				<p>In part (a) many correct answers were seen. $\frac{3}{14}$ was a common wrong answer. Sometimes the variant of the correct $\frac{21}{49}$ was seen, which scored the mark. In part (b) many candidates scored B1 for correctly converting $\frac{1}{4}$ or $\frac{1}{2}$ to sixteenths.</p> <p>Some candidates did not read the question and gave three fractions with the denominator 16 and the numerators 5, 6 and 7.</p>	
		Total	3		