

WA6MNACN5

Calculating with number

Core + Challenge

Fraction of an Amount — Marking Key

I can find a fraction of a whole number using bar models and sets, and work backwards from a part.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

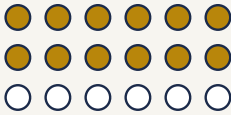
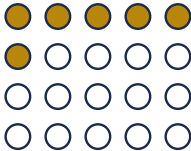
A Warm up: 16 B Practise: 21 C Think it through: 10 D Challenge: 9 **Total: 56**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

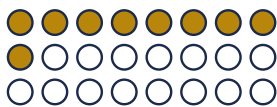
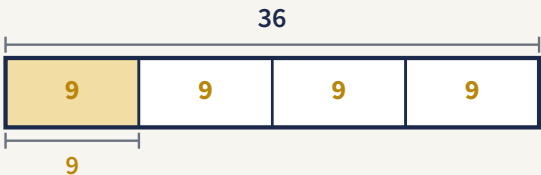
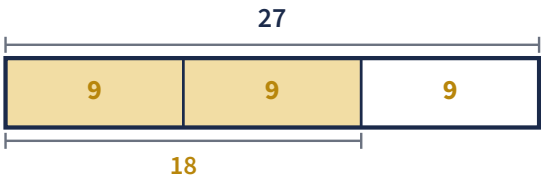
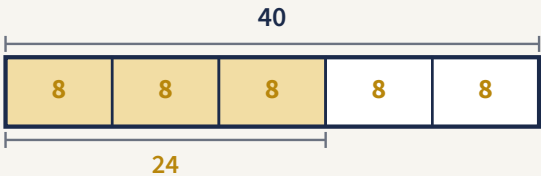
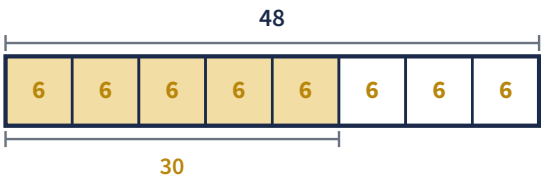
A

Warm up *answers*

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	4	 $12 \div 3 = 4$, then $1 \times 4 = 4$.	1
2	6	 $8 \div 4 = 2$, then $3 \times 2 = 6$.	1
3	6	 $15 \div 5 = 3$, then $2 \times 3 = 6$.	1
4	10	 $12 \div 6 = 2$, then $5 \times 2 = 10$.	1
5	2	 $16 \div 8 = 2$, then $1 \times 2 = 2$.	1
6	12	 $18 \div 3 = 6$, then $2 \times 6 = 12$.	1
7	6	 $20 \div 10 = 2$, then $3 \times 2 = 6$.	1

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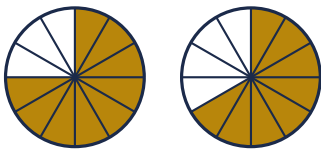
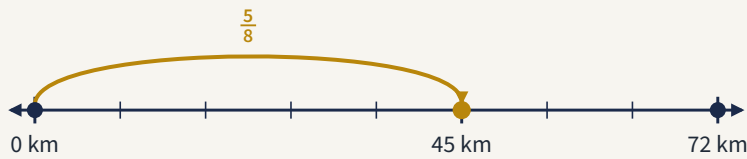
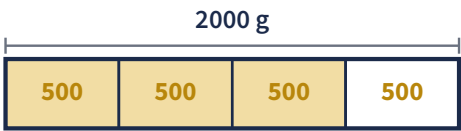
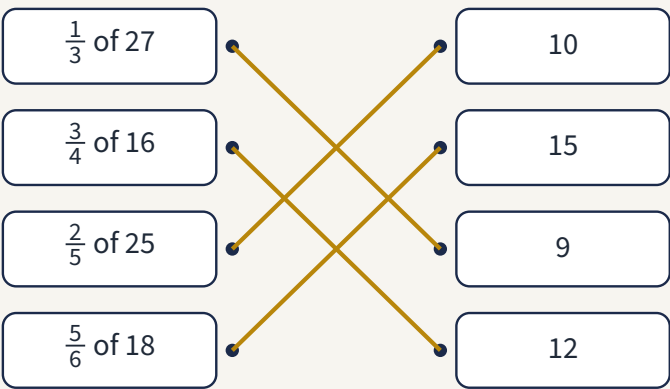
Q	Answer	Model answer / notes	Marks
8	9	 $24 \div 8 = 3$, then $3 \times 3 = 9$.	1
9	9	 Each part: $36 \div 4 = 9$. 1 part: $1 \times 9 = 9$.	1
10	18	 Each part: $27 \div 3 = 9$. 2 parts: $2 \times 9 = 18$.	1
11	24	 Each part: $40 \div 5 = 8$. 3 parts: $3 \times 8 = 24$.	1
12	30	 Each part: $48 \div 8 = 6$. 5 parts: $5 \times 6 = 30$.	1
13	42	$84 \div 2 = 42$, $1 \times 42 = 42$.	1
14	45	$60 \div 4 = 15$, $3 \times 15 = 45$.	1
15	14	$35 \div 5 = 7$, $2 \times 7 = 14$.	1
16	63	$90 \div 10 = 9$, $7 \times 9 = 63$.	1

B Practise *answers and working*

/ 21 marks

Q	Answer	Working / sample response	Marks																					
1	12	32 students 4 4 4 4 4 4 4 4 12 Each part: $32 \div 8 = 4$. 3 parts: $3 \times 4 = 12$ students. 1 mark: parts of 4 shown. 1 mark: 12.	2																					
2	Spends \$30, \$15 left	\$45 \$15 \$15 \$15 spends \$30 $\frac{1}{3}$ of \$45 = $\\$45 \div 3 = \\$15$. He spends $2 \times \\$15 = \\$30$ and has \$15 left. 1 mark: \$30. 1 mark: \$15 left.	2																					
3	10	Chocolate: $24 \div 4 = 6$. Jam: $24 \div 3 = 8$. Plain: $24 - 6 - 8 = 10$. 1 mark: 6 shaded. 1 mark: 8 circled. 1 mark: 10 plain.	3																					
4	See table	<table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th></tr><tr><td>of 60</td><td>$\frac{1}{2}$</td><td>$\frac{1}{3}$</td><td>$\frac{2}{3}$</td><td>$\frac{3}{4}$</td><td>$\frac{3}{5}$</td><td>$\frac{5}{6}$</td></tr><tr><td>Answer</td><td>30</td><td>20</td><td>40</td><td>45</td><td>36</td><td>50</td></tr></table> $\frac{1}{2}$ of 60 = 30, $\frac{1}{3}$ of 60 = 20, $\frac{2}{3}$ of 60 = 40, $\frac{3}{4}$ of 60 = 45, $\frac{3}{5}$ of 60 = 36, $\frac{5}{6}$ of 60 = 50. 3 marks: all six correct. 2 marks: four or five. 1 mark: two or three.		A	B	C	D	E	F	of 60	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{3}{5}$	$\frac{5}{6}$	Answer	30	20	40	45	36	50	3
	A	B	C	D	E	F																		
of 60	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{3}{5}$	$\frac{5}{6}$																		
Answer	30	20	40	45	36	50																		

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Q	Answer	Working / sample response	Marks
5	45 min and 40 min	 $\frac{3}{4}$ of 60 = 45 minutes (9 parts). $\frac{2}{3}$ of 60 = 40 minutes (8 parts). <i>1 mark: 45 minutes.</i> <i>1 mark: 40 minutes.</i>	2
6	45 km gone, 27 km to go	 $72 \div 8 = 9$ km for each eighth. $5 \times 9 = 45$ km gone. $72 - 45 = 27$ km to go (or $3 \times 9 = 27$). <i>1 mark: 45 km.</i> <i>1 mark: 27 km.</i>	2
7	500 g	 $2 \text{ kg} = 2000 \text{ g}$. Each quarter: $2000 \div 4 = 500 \text{ g}$. $\frac{3}{4}$ used, so $\frac{1}{4}$ is left: 500 g. <i>1 mark: changes to 2000 g (or finds $\frac{1}{4}$ is left).</i> <i>1 mark: 500 g.</i>	2
8	See lines	 $\frac{1}{3}$ of 27 = 9 $\frac{3}{4}$ of 16 = 12 $\frac{2}{5}$ of 25 = 10 $\frac{5}{6}$ of 18 = 15 <i>2 marks: all four correct. 1 mark: two or three correct.</i>	2

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Q	Answer	Working / sample response	Marks
9	$\frac{3}{5}$ of \$45, by \$3	$\frac{2}{3}$ of \$36: $36 \div 3 = 12$, $2 \times 12 = \$24$. $\frac{3}{5}$ of \$45: $45 \div 5 = 9$, $3 \times 9 = \$27$. $\$27 - \$24 = \$3$. <i>1 mark: \$24.</i> <i>1 mark: \$27.</i> <i>1 mark: $\frac{3}{5}$ of \$45 is more, by \$3.</i>	3

C

Think it through *sample answers and criteria*

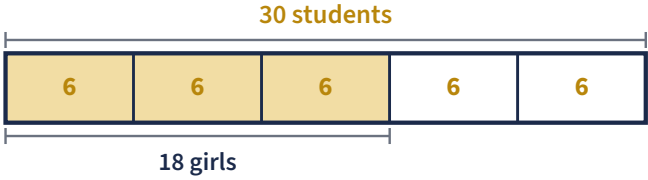
/ 10 marks

Q	Answer	Working / sample response	Marks
1	No; 20	Leo divided by the numerator. He should divide by the denominator (3) to find one third. $30 \div 3 = 10$, then $2 \times 10 = 20$. <i>1 mark: explains the mistake (divide by 3, the denominator).</i> <i>1 mark: 20.</i>	2
2	True	90 is double 45, so one third of 90 is double one third of 45, which is two thirds of 45. Check: $\frac{1}{3}$ of 90 = 30 and $\frac{2}{3}$ of 45 = $2 \times 15 = 30$. <i>1 mark: True with a check (both 30).</i> <i>1 mark: explains the doubling link (a third of double = two thirds).</i>	2
3	Sometimes	Always Sometimes Never $\frac{1}{2}$ of 8 = 4, a whole number. $\frac{1}{2}$ of 7 = $3\frac{1}{2}$, not a whole number. Only even numbers halve to a whole number. <i>1 mark: Sometimes (or false).</i> <i>1 mark: an even and an odd example.</i>	2
4	$\frac{3}{5}$ of 30	$\frac{1}{2}$ of 40 = 20, $\frac{1}{4}$ of 80 = 20, $\frac{2}{3}$ of 30 = 20. $\frac{3}{5}$ of 30 = 18. <i>1 mark: $\frac{3}{5}$ of 30.</i> <i>1 mark: shows the other three equal 20.</i>	2
5	36	Halving twice finds $\frac{1}{4}$: $48 \rightarrow 24 \rightarrow 12$. $\frac{3}{4}$ is the whole take away $\frac{1}{4}$: $48 - 12 = 36$. <i>1 mark: explains halving twice gives a quarter and whole - $\frac{1}{4} = \frac{3}{4}$.</i> <i>1 mark: 36.</i>	2

D

Challenge *solutions and criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
			
1	30 students, 12 boys	3 parts = 18, so 1 part = $18 \div 3 = 6$. 5 parts = $5 \times 6 = 30$ students. Boys: 2 parts = 12 (or $30 - 18$). <i>1 mark: one part = 6.</i> <i>1 mark: 30 students.</i> <i>1 mark: 12 boys.</i>	3
2	\$30	Book: $\frac{1}{4}$ of \$60 = \$15. Left: \$45. Lunch: $\frac{1}{3}$ of \$45 = \$15. Left: $\\$45 - \\$15 = \\$30$. <i>1 mark: \$15 for the book.</i> <i>1 mark: finds $\frac{1}{3}$ of \$45 (not of \$60).</i> <i>1 mark: \$30.</i>	3
3	$\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{18}{24}$	18 out of 24 = $\frac{18}{24} = \frac{3}{4}$, so every answer must be equal to $\frac{3}{4}$. Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24. Only 4, 8, 12 and 24 give a fraction equal to $\frac{3}{4}$: $\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{18}{24}$. With denominator 2, 3 or 6, one part of 24 is 12, 8 or 4, and 18 is not a multiple of 12, 8 or 4, so none of these work. <i>2 marks: all four fractions (1 mark for two or three).</i> <i>1 mark: explains using equivalence to $\frac{3}{4}$ or checks each factor.</i>	3