

WA7MNAC5

Calculating with number

Core + Challenge

Dividing Fractions — Marking Key

I can divide whole numbers, fractions and mixed numbers by fractions.

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

Marks summary

Section A Fluency: 16 Section B Core: 24 Section C Reasoning: 9 Section D Challenge: 7 **Total: 56**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A

Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	12	$3 \div \frac{1}{4} = \frac{3}{1} \times \frac{4}{1} = \frac{12}{1} = 12$
2	15	$5 \div \frac{1}{3} = \frac{5}{1} \times \frac{3}{1} = \frac{15}{1} = 15$
3	5	$2 \div \frac{2}{5} = \frac{2}{1} \times \frac{5}{2} = \frac{10}{2} = 5$
4	$\frac{1}{8}$	$\frac{1}{2} \div 4 = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$
5	$\frac{1}{4}$	$\frac{3}{4} \div 3 = \frac{3}{4} \times \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$
6	2	$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times \frac{4}{1} = \frac{4}{2} = 2$
7	4	$\frac{2}{3} \div \frac{1}{6} = \frac{2}{3} \times \frac{6}{1} = \frac{12}{3} = 4$
8	2	$\frac{3}{5} \div \frac{3}{10} = \frac{3}{5} \times \frac{10}{3} = \frac{30}{15} = 2$
9	$1\frac{1}{4}$	$\frac{5}{6} \div \frac{2}{3} = \frac{5}{6} \times \frac{3}{2} = \frac{15}{12} = 1\frac{1}{4}$
10	$\frac{6}{7}$	$\frac{4}{7} \div \frac{2}{3} = \frac{4}{7} \times \frac{3}{2} = \frac{12}{14} = \frac{6}{7}$
11	$3\frac{1}{2}$	$\frac{7}{8} \div \frac{1}{4} = \frac{7}{8} \times \frac{4}{1} = \frac{28}{8} = 3\frac{1}{2}$
12	$1\frac{1}{2}$	$\frac{9}{10} \div \frac{3}{5} = \frac{9}{10} \times \frac{5}{3} = \frac{45}{30} = 1\frac{1}{2}$
13	2	$1\frac{1}{2} \div \frac{3}{4} = \frac{3}{2} \times \frac{4}{3} = \frac{12}{6} = 2$
14	$3\frac{1}{2}$	$5\frac{1}{4} \div 1\frac{1}{2} = \frac{21}{4} \times \frac{2}{3} = \frac{42}{12} = 3\frac{1}{2}$
15	4	$3\frac{1}{3} \div \frac{5}{6} = \frac{10}{3} \times \frac{6}{5} = \frac{60}{15} = 4$
16	$1\frac{2}{3}$	$2\frac{2}{3} \div 1\frac{3}{5} = \frac{8}{3} \times \frac{5}{8} = \frac{40}{24} = 1\frac{2}{3}$

B

Core *answers, working and marks*

/ 24 marks

Q	Answer	Working / sample response	Marks
1	14 servings	$3\frac{1}{2} \div \frac{1}{4} = \frac{7}{2} \times \frac{4}{1} = \frac{28}{2} = 14$ <i>1 mark: working</i> <i>1 mark: 14</i>	2
2	8 pieces	$6 \div \frac{3}{4} = 6 \times \frac{4}{3} = 8$ <i>1 mark: working</i> <i>1 mark: 8</i>	2
3	6	There are 6 thirds in 2 wholes, so $2 \div \frac{1}{3} = 6$. <i>1 mark: 6</i> <i>1 mark: '6 thirds fit into 2'</i>	2
4	$\frac{1}{6}$	$\frac{2}{3} \div 4 = \frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$ <i>1 mark: working</i> <i>1 mark: $\frac{1}{6}$</i>	2
5	400 km	$250 \div \frac{5}{8} = 250 \times \frac{8}{5} = 400$ Or: $\frac{1}{8}$ tank $\rightarrow 250 \div 5 = 50$ km, so $\frac{8}{8} \rightarrow 400$ km <i>1 mark: division set up (or unitary method)</i> <i>1 mark: correct calculation</i> <i>1 mark: 400 km</i>	3
6	(a) 3 m (b) 11 m	(a) $\frac{15}{2} \div \frac{5}{2} = \frac{15}{2} \times \frac{2}{5} = 3$ (b) $2 \times (3 + 2\frac{1}{2}) = 11$ <i>1 mark: division set up</i> <i>1 mark: 3 m</i> <i>1 mark: 11 m</i>	3
7	12 patties	$\frac{9}{2} \div \frac{3}{8} = \frac{9}{2} \times \frac{8}{3} = \frac{72}{6} = 12$ <i>1 mark: working</i> <i>1 mark: 12</i>	2
8	(a) 7 glasses (b) $\frac{3}{20}$ L	$\frac{9}{4} \div \frac{3}{10} = \frac{9}{4} \times \frac{10}{3} = \frac{90}{12} = 7\frac{1}{2}$ 7 full glasses use $\frac{21}{10}$ L; $\frac{9}{4} - \frac{21}{10} = \frac{45}{20} - \frac{42}{20} = \frac{3}{20}$ L <i>1 mark: $7\frac{1}{2}$</i> <i>1 mark: 7 full glasses</i> <i>1 mark: $\frac{3}{20}$ L</i>	3
9	8	$12 \div \frac{3}{2} = 12 \times \frac{2}{3} = 8$ <i>1 mark: working</i> <i>1 mark: 8</i>	2

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Q	Answer	Working / sample response	Marks
10	(a) $\frac{2}{15}$ (b) $7\frac{1}{2}$ days, so 8 days	$\frac{2}{3} \div 5 = \frac{2}{15}$ $1 \div \frac{2}{15} = \frac{15}{2} = 7\frac{1}{2}$; she finishes on the 8th day <i>1 mark: $\frac{2}{15}$</i> <i>1 mark: $7\frac{1}{2}$</i> <i>1 mark: interprets as 8 days</i>	3

C Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	$4 \div \frac{1}{2} = 8 = 4 \times 2$	There are 2 halves in every whole, so in 4 wholes there are $4 \times 2 = 8$ halves. <i>1 mark: 8</i> <i>1 mark: halves-per-whole explanation</i>	2
2	Greater	Dividing by a number less than 1 gives a larger answer, because more than one lot of $\frac{2}{3}$ fits. (Exact: $1\frac{1}{4}$.) <i>1 mark: greater</i> <i>1 mark: reasoning</i>	2
3	$1\frac{1}{2}$	Noah flipped the first fraction instead of the second. $\frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = 1\frac{1}{2}$ <i>1 mark: identifies wrong fraction flipped</i> <i>1 mark: $1\frac{1}{2}$</i>	2
4	$6 \div 2, 6 \div \frac{3}{2}, 6 \div \frac{2}{3}, 6 \div \frac{1}{2}$	The smaller the number you divide by, the bigger the answer. Order the divisors: $2 > \frac{3}{2} > \frac{2}{3} > \frac{1}{2}$. (Values: 3, 4, 9, 12) <i>1 mark: correct order</i> <i>2 marks: explanation</i>	3

D Challenge *solutions and marking criteria*

/ 7 marks

Q	Answer	Working / sample response	Marks
1	4	e.g. "A 3 L jug fills how many $\frac{3}{4}$ L bottles?" $3 \times \frac{4}{3} = 4$ bottles. <i>1 mark: problem matches $3 \div \frac{3}{4}$ (how many $\frac{3}{4}$s in 3)</i> <i>1 mark: answer 4 in context</i>	2
2	$7\frac{1}{2}$ scoops	$5 \div \frac{2}{3} = 5 \times \frac{3}{2} = \frac{15}{2} = 7\frac{1}{2}$ 7 full scoops, plus half a scoop. Half of a $\frac{2}{3}$ -cup scoop is $\frac{1}{3}$ cup. <i>1 mark: $7\frac{1}{2}$</i> <i>2 marks: explains the $\frac{1}{2}$ is half a scoop ($\frac{1}{3}$ cup), not half a cup</i>	3

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Q	Answer	Working / sample response	Marks
3	(a) $\frac{1}{2}$ (b) 1	(a) $\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times 2 = 1\frac{1}{2}$ (b) $2\frac{1}{2} \times \frac{2}{5} = \frac{5}{2} \times \frac{2}{5} = 1$ <i>1 mark each</i>	2