Planner

Multiplying and dividing

- Recognising and using reciprocals
- Understanding the effects of multiplying and dividing positive numbers by numbers between 0 and 1

Keywords

You should know

explanation 1 online

1 Rewrite each statement using an appropriate inverse operation.

a $37 \times 8 = 296$ **b** $58 \times 12 = 696$ **c** $567 \div 63 = 9$ **d** $2754 \div 18 = 153$

2 Rewrite each statement using an inverse operation and solve it.

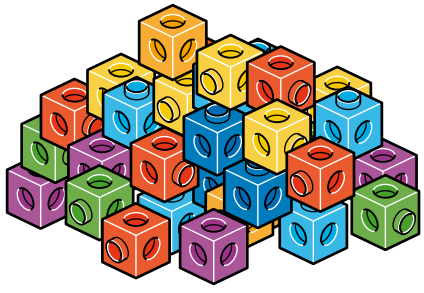
a $\square \times 30 = 870$ **b** $\square \div 37 = 20$ **c** $12 \times \square = 180$ **d** $\square \div 50 = 24$

3 Write an equation for this question, then use an inverse operation to solve it.

Michelle had a pile of building blocks to share equally among 25 children.

Each child received 200 building blocks.

How many building blocks did Michelle start with?



explanation 2a explanation 2b

4 Find the reciprocals of these.

a $\frac{1}{6}$ **b** $\frac{3}{4}$ **c** $\frac{8}{7}$ **d** $\frac{12}{7}$ **e** 11

f $\frac{6}{13}$ **g** $\frac{7}{10}$ **h** $\frac{1}{2}$ **i** 25 **j** $\frac{50}{63}$

5 **a** To find the reciprocal of 0.6 Jamie first rewrote 0.6 as $\frac{6}{10}$.
His answer was $\frac{10}{6}$. Is this correct?

b Use Jamie's method to find the reciprocals of these numbers.

i 0.2 **ii** 0.9 **iii** 0.24 **iv** 0.56 **v** 0.884 **vi** 0.345

6 Copy and complete these statements.

a Multiplying by $\frac{1}{7}$ is the same as dividing by $\square$.

b Multiplying by $\square$ is the same as dividing by 12.

c Dividing by $\frac{1}{3}$ is the same as multiplying by $\square$.

d Dividing by $\square$ is the same as multiplying by 15.

7 **a** Which of these is the correct statement for 'How many quarters are in 7?'?

A $7 \times \frac{1}{4}$ **B** $7 \div \frac{1}{4}$ **C** $\frac{1}{4} \div 7$ **D** $\frac{1}{4} \times 7$

b What is the answer?

8 Find the answers to these.

a $12 \div \frac{1}{6}$ **b** $15 \div \frac{1}{5}$ **c** $13 \div \frac{1}{8}$ **d** $36 \div \frac{1}{3}$ **e** $50 \div \frac{1}{7}$

9 Copy and complete these statements.

a $35 \times \frac{1}{7} = \square$ therefore $\square \div \frac{1}{7} = 35$

b $96 \times \frac{1}{12} = \square$ therefore $\square \div \frac{1}{12} = 96$

c $125 \times \frac{1}{25} = \square$ therefore $\square \div \frac{1}{25} = 125$

10 Rewrite these statements as multiplications using a fraction.

a $120 \div 24 = 5$ **b** $207 \div 9 = 23$ **c** $210 \div 15 = 14$ **d** $308 \div 11 = 28$

11 Copy and complete these sentences.

Give an example for each of them.

a Multiplication by a fraction is equivalent to division by its _____ .

b Division by a fraction is equivalent to multiplication by its _____ .

explanation 3

12 Which of these calculations will have an answer *greater* than 0.65?

a 0.65×1.2 **b** $0.65 \div 1.2$ **c** 0.65×0.4 **d** $0.65 \div 0.005$

e 0.65×0.06 **f** $0.65 \div 2.5$ **g** 0.65×3.4 **h** $0.65 \div 0.99$

13 Which of these calculations will have an answer *less* than 150?

a 150×0.4 **b** $150 \div 2.1$ **c** 150×8.6 **d** $150 \div 0.5$

e 150×1.4 **f** 150×0.07 **g** $150 \div 13.2$ **h** $150 \div 0.003$

14 Which calculations in each set have an answer *less* than 2.06?

a **A** 2.06×3.1 **B** 2.06×0.31 **C** $2.06 \div 0.31$

b **A** $2.06 \div 0.64$ **B** $2.06 \div 6.4$ **C** 2.06×0.64

c **A** 2.06×0.206 **B** 2.06×2.06 **C** $2.06 \div 2.06$

d **A** $2.06 \div 0.99$ **B** 2.06×9.9 **C** $2.06 \div 9.9$

15 Weston did this calculation.

$5.02 \times 0.6 = 30.12$

How can you tell, without doing the calculation, that it is wrong?

16 When a positive number n is multiplied by 0.4, the answer is less than n.

a What is the inverse of multiplying by 0.4?

b If a positive number p is divided by 0.4, is the answer more or less than p?

17 Copy and complete these sentences.

Give an example for each of them.

a When a positive number m is multiplied by a number between 0 and 1, the answer will be _____ than m.

b When a positive number r is divided by a number between 0 and 1, the answer will be _____ than r.