

Multiply and divide improper and mixed fractions

H

- 1 Dora and Teddy are working out $3\frac{1}{2} \times \frac{1}{5}$

Dora

$$\begin{aligned} 3\frac{1}{2} \times \frac{1}{5} &= 3 \times \frac{1}{5} + \frac{1}{2} \times \frac{1}{5} \\ &= \frac{3}{5} + \frac{1}{10} \\ &= \frac{6}{10} + \frac{1}{10} = \frac{7}{10} \end{aligned}$$

Teddy

$$\begin{aligned} 3\frac{1}{2} \times \frac{1}{5} &= \frac{7}{2} \times \frac{1}{5} \\ &= \frac{7}{10} \end{aligned}$$

Whose method do you prefer? Talk about it with a partner.

- 2 Complete the calculations. Show all your workings.

a) $2\frac{2}{3} \times \frac{1}{3} = \boxed{\frac{8}{9}}$

d) $5\frac{1}{2} \times 3 = \boxed{16\frac{1}{2}}$

b) $3\frac{1}{6} \times 2 = \boxed{6\frac{1}{3}}$

e) $3 \times 2\frac{3}{4} = \boxed{8\frac{1}{4}}$

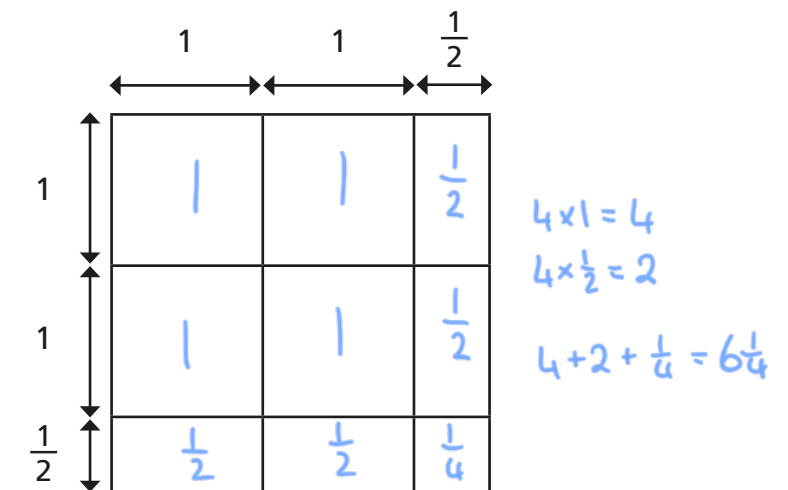
c) $5 \times 1\frac{3}{10} = \boxed{6\frac{1}{2}}$

f) $2 \times 1\frac{3}{5} \times 3 = \boxed{9\frac{3}{5}}$

- 3 Dexter works out $(2\frac{1}{2})^2$

$$2\frac{1}{2} \times 2\frac{1}{2} = \frac{5}{2} \times \frac{5}{2} = \frac{25}{4} = 6\frac{1}{4}$$

Use the diagram to show that Dexter's answer is correct.



- 4 Work out these multiplications.

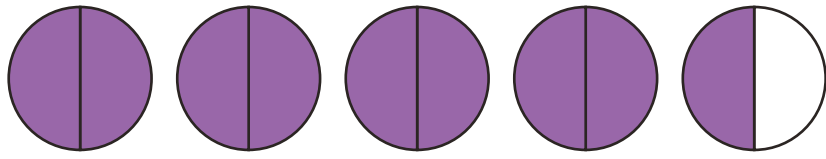
a) $2\frac{2}{3} \times 2\frac{1}{3} = \boxed{6\frac{2}{9}}$

c) $\frac{9}{10} \times 3\frac{1}{4} = \boxed{2\frac{37}{40}}$

b) $3\frac{5}{6} \times 2\frac{1}{2} = \boxed{9\frac{7}{12}}$

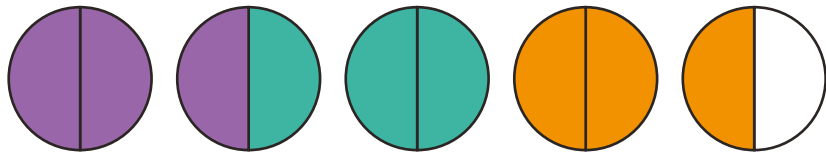
5

- a) How does the diagram represent $4\frac{1}{2} \div \frac{1}{2} = 9$?



Discuss it with a partner.

- b) How does this diagram represent $4\frac{1}{2} \div 1\frac{1}{2} = 3$?



Discuss it with a partner.

- c) Complete the calculations. Use the diagrams to help you.

$$6\frac{1}{4} \div 1\frac{1}{4} = \boxed{5}$$



$$5\frac{1}{3} \div 1\frac{1}{3} = \boxed{4}$$



6

- Complete the calculations.

$$\text{a) } 3\frac{1}{2} \div 2 = \boxed{\frac{7}{4}} = 1\frac{3}{4}$$

$$\text{c) } 3\frac{1}{2} \div 2\frac{1}{4} = \boxed{\frac{14}{9}} = 1\frac{5}{9}$$

$$\text{b) } 3\frac{1}{2} \div 2\frac{1}{2} = \boxed{\frac{7}{5}} = 1\frac{2}{5}$$

$$\text{d) } 6\frac{1}{4} \div 3\frac{1}{8} = \boxed{2}$$

7

- a) How many pieces of wood $1\frac{3}{4}$ m long can be cut from a length of 9 m?

$$\boxed{5\frac{1}{4}}$$

- b) Find the area of a triangle with a base of $3\frac{5}{8}$ cm and perpendicular height of $2\frac{1}{2}$ cm.

$$\boxed{4\frac{17}{32} \text{ cm}^2}$$

- c) A parallelogram with a base of 3.25 cm has an area of 12.6 cm^2 . Use fractions to work out the height of the parallelogram.

$$\boxed{3\frac{57}{65} \text{ cm}}$$