

# Multiply unit fractions by an integer



1 Complete the calculations.

Use the bar models to help you.



$$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{3}{5} \qquad 3 \times \frac{1}{5} = \frac{3}{5}$$



$$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{4}{7} \qquad 4 \times \frac{1}{7} = \frac{4}{7}$$



$$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{5}{8} \qquad 5 \times \frac{1}{8} = \frac{5}{8}$$



$$\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = \frac{7}{10} \qquad 7 \times \frac{1}{10} = \frac{7}{10}$$

2 Complete the multiplications.

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

e)  $\frac{1}{5} \times 4 = \frac{4}{5}$

b)  $3 \times \frac{1}{10} = \frac{3}{10}$

f)  $\frac{1}{9} \times 8 = \frac{8}{9}$

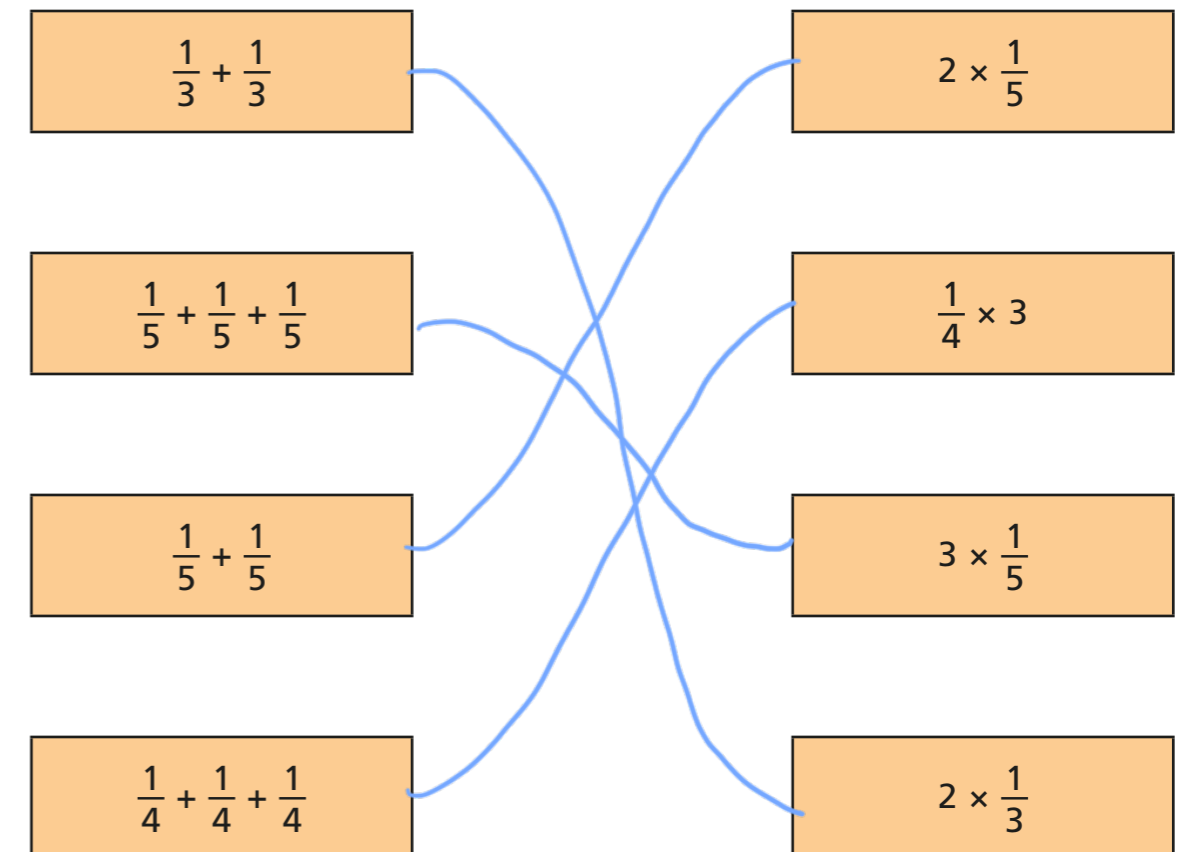
c)  $\frac{1}{8} \times 5 = \frac{5}{8}$

g)  $8 \times \frac{1}{11} = \frac{8}{11}$

d)  $9 \times \frac{1}{10} = \frac{9}{10}$

h)  $\frac{1}{11} \times 10 = \frac{10}{11}$

3 Match the addition to the equivalent multiplication.

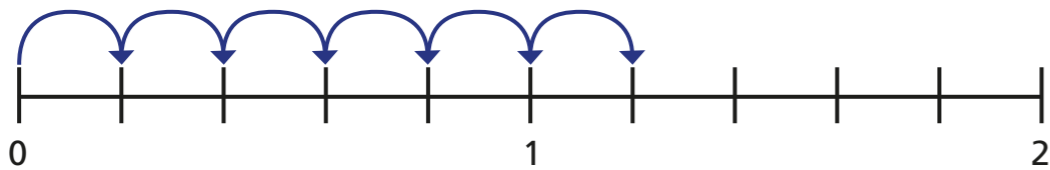


- 4 A pizza is cut into sixths.  
Jack eats five of the slices.  
Write a multiplication to represent this.

$$\boxed{5} \times \boxed{\frac{1}{6}} = \boxed{\frac{5}{6}}$$

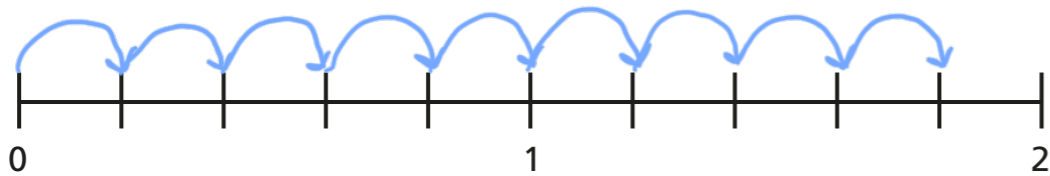
- 5 Complete the multiplications.  
Use the number lines to help you.  
Give each answer as an improper fraction and as a mixed number.

a)



$$6 \times \frac{1}{5} = \boxed{\frac{6}{5}} = \boxed{1\frac{1}{5}}$$

b)



$$9 \times \frac{1}{5} = \boxed{\frac{9}{5}} = \boxed{1\frac{4}{5}}$$

- 6 Complete the multiplications.

$$\text{a) } 11 \times \frac{1}{10} = \boxed{\frac{11}{10}} = \boxed{1\frac{1}{10}}$$

$$\text{b) } 11 \times \frac{1}{9} = \boxed{\frac{11}{9}} = \boxed{1\frac{2}{9}}$$

$$\text{c) } \frac{1}{8} \times 11 = \boxed{\frac{11}{8}} = \boxed{1\frac{3}{8}}$$

$$\text{d) } 11 \times \frac{1}{7} = \boxed{\frac{11}{7}} = \boxed{1\frac{4}{7}}$$

$$\text{e) } 11 \times \frac{1}{6} = \boxed{\frac{11}{6}} = \boxed{1\frac{5}{6}}$$

What do you notice?

Does this pattern continue?

- 7 Complete the calculations.

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

$$\text{e) } \frac{1}{8} \times \boxed{11} = 1\frac{3}{8}$$

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

$$\text{f) } \boxed{7} \times \frac{1}{2} = 3\frac{1}{2}$$

$$\text{c) } \boxed{7} \times \frac{1}{7} = 1$$

$$\text{g) } \boxed{10} \times \frac{1}{3} = 3\frac{1}{3}$$

$$\text{d) } \frac{1}{7} \times \boxed{10} = 1\frac{3}{7}$$

$$\text{h) } \frac{1}{4} \times \boxed{13} = 3\frac{1}{4}$$



# Multiply non-unit fractions by an integer



1 Complete the calculations.

Use the bar models to help you.



$$\frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7} \qquad 3 \times \frac{2}{7} = \frac{6}{7}$$



$$\frac{3}{10} + \frac{3}{10} + \frac{3}{10} = \frac{9}{10} \qquad 3 \times \frac{3}{10} = \frac{9}{10}$$



$$\frac{2}{9} + \frac{2}{9} + \frac{2}{9} + \frac{2}{9} = \frac{8}{9} \qquad 4 \times \frac{2}{9} = \frac{8}{9}$$



$$\frac{4}{9} + \frac{4}{9} = \frac{8}{9} \qquad 2 \times \frac{4}{9} = \frac{8}{9}$$

What do you notice about parts c) and d)? Talk to a partner.

2 Complete the multiplications.

a)  $2 \times \frac{3}{7} = \frac{6}{7}$

d)  $5 \times \frac{2}{11} = \frac{10}{11}$

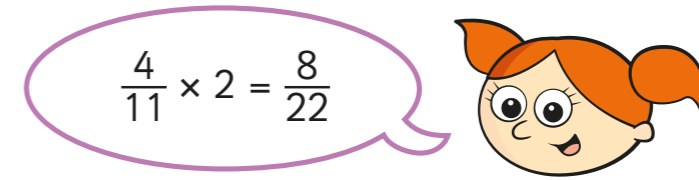
b)  $3 \times \frac{3}{11} = \frac{9}{11}$

e)  $\frac{2}{15} \times 7 = \frac{14}{15}$

c)  $\frac{2}{11} \times 4 = \frac{8}{11}$

f)  $\frac{7}{15} \times 2 = \frac{14}{15}$

3



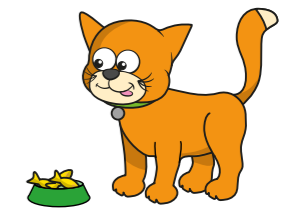
Explain the mistake that Alex has made.

She has multiplied both the numerator and the denominator.  
 $\frac{4}{11} \times 2 = \frac{8}{11}$

4

A cat eats  $\frac{2}{15}$  of a bag of biscuits a day.

What fraction of the bag does the cat eat in 4 days?



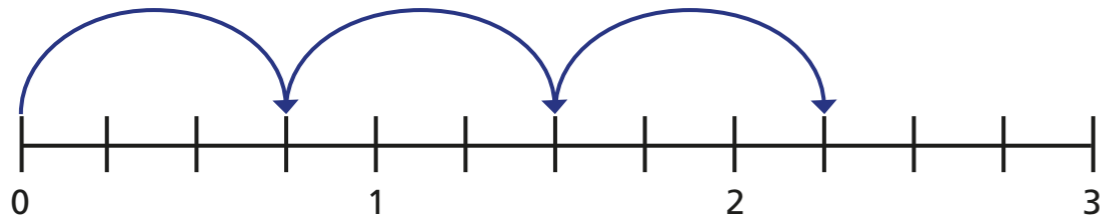
The cat eats  $\frac{8}{15}$  of the bag in 4 days.

5 Complete the multiplications.

Use the number lines to help you.

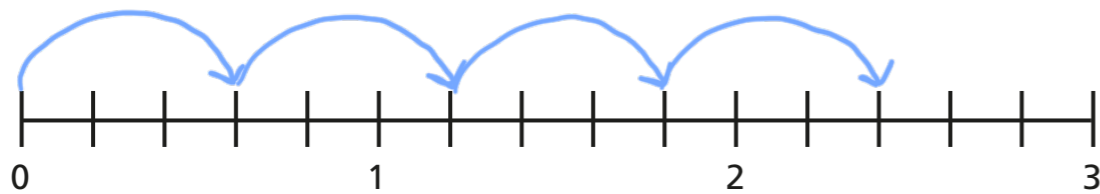
Give each answer as an improper fraction and as a mixed number.

a)



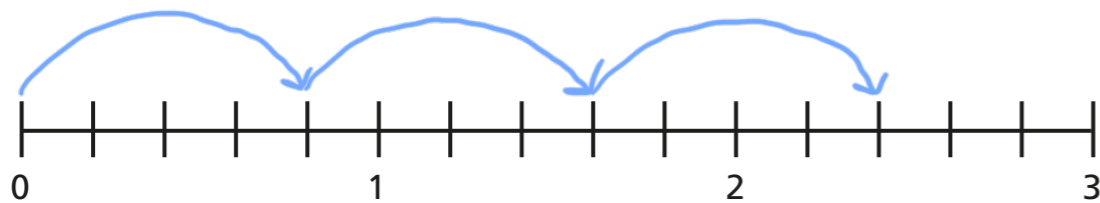
$$3 \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$$

b)



$$4 \times \frac{3}{5} = \frac{12}{5} = 2\frac{2}{5}$$

c)



$$3 \times \frac{4}{5} = \frac{12}{5} = 2\frac{2}{5}$$



6 Complete the multiplications.

$$\text{a) } 5 \times \frac{2}{3} = \frac{10}{3} = 3\frac{1}{3}$$

$$\text{b) } 4 \times \frac{4}{5} = \frac{16}{5} = 3\frac{1}{5}$$

$$\text{c) } \frac{2}{7} \times 11 = \frac{22}{7} = 3\frac{1}{7}$$

$$\text{d) } 4 \times \frac{7}{9} = \frac{28}{9} = 3\frac{1}{9}$$

$$\text{e) } 17 \times \frac{2}{11} = \frac{34}{11} = 3\frac{1}{11}$$

f) Describe the pattern you can see in the answers.

g) What could the next multiplication in the pattern be?

Write two possible options.

e.g.  $\frac{5}{13} \times 8$   
 $10 \times \frac{4}{13}$

7 Here are some digit cards.



Use the digit cards to complete the multiplication.

$$\boxed{5} \times \frac{\boxed{3}}{8} = \frac{15}{8} = \boxed{1} \frac{\boxed{7}}{8}$$

