

# Subtract – breaking the whole



1 Complete the subtractions.

Use the bar models to help you.

a)


$$2\frac{1}{2} - \frac{7}{12} = \boxed{\phantom{00}}$$

b)


$$2\frac{1}{3} - \frac{7}{12} = \boxed{\phantom{00}}$$

c)


$$2\frac{1}{4} - \frac{7}{12} = \boxed{\phantom{00}}$$

2 a) Complete the subtractions.

$$3\frac{1}{4} - \frac{1}{8} = \boxed{\phantom{00}}$$

$$3\frac{1}{4} - \frac{2}{8} = \boxed{\phantom{00}}$$

$$3\frac{1}{4} - \frac{3}{8} = \boxed{\phantom{00}}$$

$$3\frac{1}{4} - \frac{4}{8} = \boxed{\phantom{00}}$$

b) At what point did the answer break the whole? Why?

c) Tick the calculations that will break the whole.

$$3\frac{1}{2} - \frac{9}{10}$$

$$7\frac{3}{4} - \frac{1}{8}$$

$$6\frac{11}{12} - \frac{2}{3}$$

$$4\frac{2}{5} - \frac{7}{15}$$

3 Complete the subtractions.

$$a) 3\frac{1}{5} - \frac{7}{15} = \boxed{\phantom{00}}$$

$$d) 2\frac{1}{6} - \frac{5}{12} = \boxed{\phantom{00}}$$

$$b) 3\frac{1}{16} - \frac{5}{8} = \boxed{\phantom{00}}$$

$$e) 3\frac{2}{9} - \frac{13}{18} = \boxed{\phantom{00}}$$

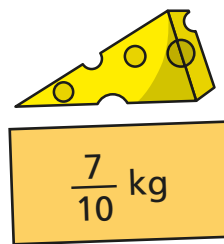
$$c) 4\frac{5}{12} - \frac{5}{6} = \boxed{\phantom{00}}$$

$$f) 3\frac{4}{9} - \frac{13}{27} = \boxed{\phantom{00}}$$

- 4 Here are some ingredients.



Potatoes



Cheese



Carrots

- a) How much more do the carrots weigh than the cheese?

The carrots weigh  kg more than the cheese.

- b) Jack uses  $\frac{17}{20}$  kg of carrots.

How many kilograms of carrots does he have left?

Jack has  kg of carrots left.

- c) Jack uses all the cheese and the same amount of potatoes.

How much do the leftover potatoes weigh?

The leftover potatoes weigh  kg.

- 5 Eva is doing the long jump.

On her 1st attempt, she jumps  $3\frac{2}{9}$  m.

Her 2nd attempt is  $\frac{2}{3}$  m shorter than her first.

How far does Eva jump on her 2nd attempt?

Eva jumps  m on her 2nd attempt.

- 6 a) The difference between a mixed number and a fraction is  $\frac{7}{8}$

The fraction has a denominator of 16

What could the mixed number and the fraction be?

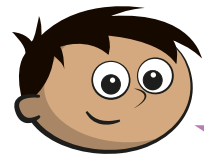
Give two possible answers.

and        and

- b) Talk to a partner about how you could find more answers.

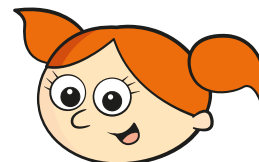
# Subtract 2 mixed numbers

- 1 Amir and Alex are working out  $3\frac{1}{2} - 2\frac{1}{4}$



Amir

First subtract 2 from 3,  
then subtract  $\frac{1}{4}$  from  $\frac{1}{2}$   
That leaves  $1\frac{1}{4}$



Alex

Convert to an improper  
fraction first,  $\frac{7}{2} - \frac{9}{4}$ , then  
 $\frac{14}{4} - \frac{9}{4} = \frac{5}{4} = 1\frac{1}{4}$

Whose method do you prefer?



- 2 Use your preferred method to complete the subtractions.

a)  $4\frac{4}{5} - 2\frac{3}{10} = \square$

c)  $16\frac{1}{2} - 5\frac{1}{4} = \square$

b)  $3\frac{5}{8} - 1\frac{1}{4} = \square$

d)  $10\frac{5}{6} - 5\frac{5}{12} = \square$

What do you notice about your answer to part d)?



- 3 Car A travels for  $15\frac{1}{4}$  miles.

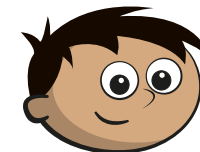


Car B travels for  $21\frac{5}{12}$  miles.

How much further does Car B travel than Car A?

Car B travels  miles further than Car A.

- 4 Amir and Dora are working out  $4\frac{1}{5} - 1\frac{2}{5}$



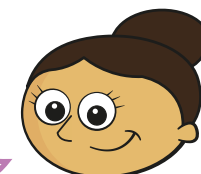
Amir

You can't use my  
method because you can't do  
 $\frac{1}{5} - \frac{2}{5}$

a) Do you agree with Amir?

b)

I know that  $4\frac{1}{5} = 3\frac{6}{5}$



Dora

How does this help you to work out the subtraction?

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c) Complete the calculation.

$4\frac{1}{5} - 1\frac{2}{5} = \square$

5 Complete the subtractions.

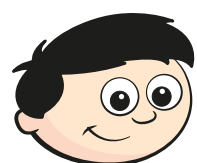
a)  $4\frac{4}{5} - 2\frac{9}{10} = \square$

c)  $5\frac{2}{7} - 2\frac{11}{14} = \square$

b)  $3\frac{5}{8} - 1\frac{3}{4} = \square$

d)  $2\frac{1}{6} - 1\frac{7}{18} = \square$

6 Dexter is subtracting fractions.



$5\frac{2}{3} - 3\frac{5}{6} = 2\frac{1}{6}$

Explain the mistake that Dexter has made.

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7 Here are some number cards.

$3\frac{1}{12}$

$4\frac{1}{2}$

$2\frac{5}{24}$

$4\frac{5}{6}$

a) Use two of the number cards to find the smallest difference.

$\square - \square = \square$

b) Use two of the number cards to find the difference closest to 2

$\square - \square = \square$

8 Complete the magic square.

The total of each column is  $5\frac{7}{20}$

The total of each row is  $5\frac{7}{20}$

$1\frac{1}{2}$	$1\frac{3}{5}$	
	$1\frac{7}{20}$	$1\frac{7}{10}$

9 A marathon is  $26\frac{1}{5}$  miles.

Dexter has run  $18\frac{1}{10}$  miles.

Eva has run  $19\frac{3}{5}$  miles.

a) How much further has Eva run than Dexter?

$\square$  miles

b) How much further does Eva need to run to complete the marathon?

$\square$  miles



# Multiply unit fractions by an integer



1 Complete the calculations.

Use the bar models to help you.

a) 

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$$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \boxed{\phantom{00}}$$

$$3 \times \frac{1}{5} = \boxed{\phantom{00}}$$

b) 

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$$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \boxed{\phantom{00}}$$

$$4 \times \frac{1}{7} = \boxed{\phantom{00}}$$

c) 

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$$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \boxed{\phantom{00}}$$

$$5 \times \frac{1}{8} = \boxed{\phantom{00}}$$

d) 

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$$\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = \boxed{\phantom{00}}$$

$$7 \times \frac{1}{10} = \boxed{\phantom{00}}$$

2 Complete the multiplications.

a)  $3 \times \frac{1}{8} = \boxed{\phantom{00}}$

e)  $\frac{1}{5} \times 4 = \boxed{\phantom{00}}$

b)  $3 \times \frac{1}{10} = \boxed{\phantom{00}}$

f)  $\frac{1}{9} \times 8 = \boxed{\phantom{00}}$

c)  $\frac{1}{8} \times 5 = \boxed{\phantom{00}}$

g)  $8 \times \frac{1}{11} = \boxed{\phantom{00}}$

d)  $9 \times \frac{1}{10} = \boxed{\phantom{00}}$

h)  $\frac{1}{11} \times 10 = \boxed{\phantom{00}}$

3 Match the addition to the equivalent multiplication.

$$\frac{1}{3} + \frac{1}{3}$$

$$2 \times \frac{1}{5}$$

$$\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$$

$$\frac{1}{4} \times 3$$

$$\frac{1}{5} + \frac{1}{5}$$

$$3 \times \frac{1}{5}$$

$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$$

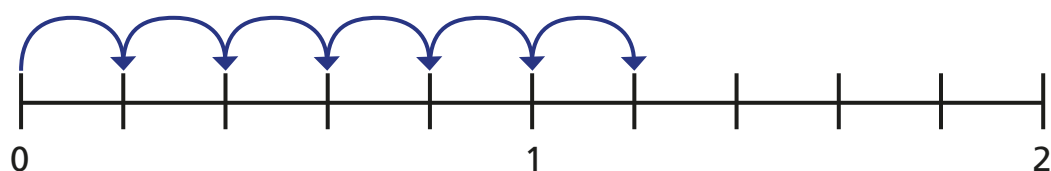
$$2 \times \frac{1}{3}$$

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

$$\square \times \square = \square$$

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

a)



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

b)



$$9 \times \frac{1}{5} = \square = \square$$



- 6 Complete the multiplications.

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

b)  $11 \times \frac{1}{9} = \square = \square$

c)  $\frac{1}{8} \times 11 = \square = \square$

d)  $11 \times \frac{1}{7} = \square = \square$

e)  $11 \times \frac{1}{6} = \square = \square$

What do you notice?

Does this pattern continue?

- 7 Complete the calculations.

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

e)  $\frac{1}{8} \times \square = 1\frac{3}{8}$

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

f)  $\square \times \frac{1}{2} = 3\frac{1}{2}$

c)  $\square \times \frac{1}{7} = 1$

g)  $\square \times \frac{1}{3} = 3\frac{1}{3}$

d)  $\frac{1}{7} \times \square = 1\frac{3}{7}$

h)  $\frac{1}{4} \times \square = 3\frac{1}{4}$

# Multiply non-unit fractions by an integer



1 Complete the calculations.

Use the bar models to help you.

a) 

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$$\frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \boxed{\phantom{00}}$$

$$3 \times \frac{2}{7} = \boxed{\phantom{00}}$$

b) 

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$$\frac{3}{10} + \frac{3}{10} + \frac{3}{10} = \boxed{\phantom{00}}$$

$$3 \times \frac{3}{10} = \boxed{\phantom{00}}$$

c) 

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$$\frac{2}{9} + \frac{2}{9} + \frac{2}{9} + \frac{2}{9} = \boxed{\phantom{00}}$$

$$4 \times \frac{2}{9} = \boxed{\phantom{00}}$$

d) 

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$$\frac{4}{9} + \frac{4}{9} = \boxed{\phantom{00}}$$

$$2 \times \frac{4}{9} = \boxed{\phantom{00}}$$

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

2 Complete the multiplications.

a)  $2 \times \frac{3}{7} = \boxed{\phantom{00}}$

d)  $5 \times \frac{2}{11} = \boxed{\phantom{00}}$

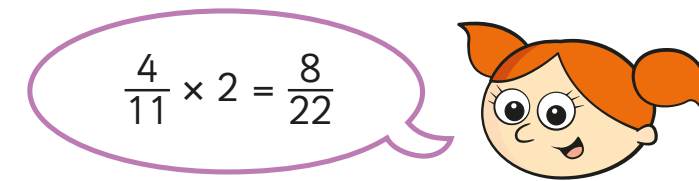
b)  $3 \times \frac{3}{11} = \boxed{\phantom{00}}$

e)  $\frac{2}{15} \times 7 = \boxed{\phantom{00}}$

c)  $\frac{2}{11} \times 4 = \boxed{\phantom{00}}$

f)  $\frac{7}{15} \times 2 = \boxed{\phantom{00}}$

3



Explain the mistake that Alex has made.

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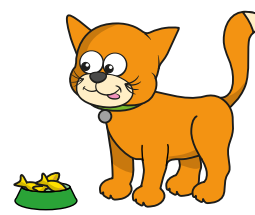
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4

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  $\boxed{\phantom{00}}$  of the bag in 4 days.

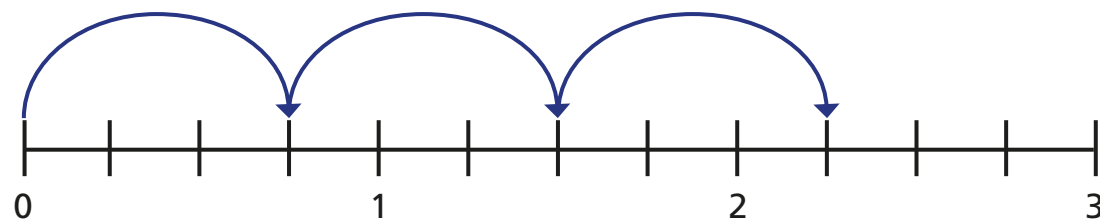
5

Complete the multiplications.

Use the number lines to help you.

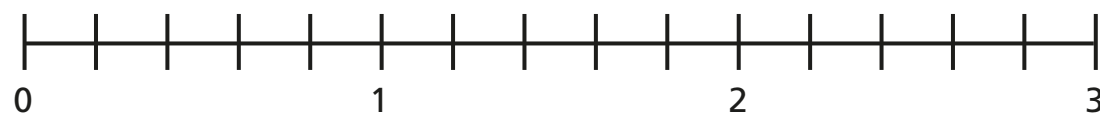
Give each answer as an improper fraction and as a mixed number.

a)



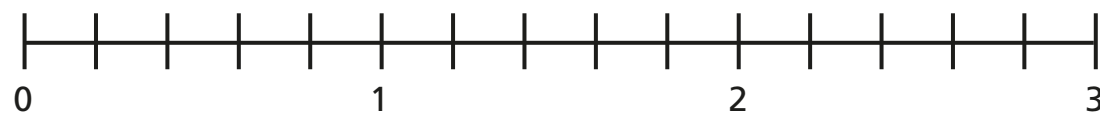
$$3 \times \frac{3}{5} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

b)



$$4 \times \frac{3}{6} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

c)



$$3 \times \frac{4}{6} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$



6

Complete the multiplications.

$$\text{a) } 5 \times \frac{2}{3} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$\text{b) } 4 \times \frac{4}{5} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$\text{c) } \frac{2}{7} \times 11 = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$\text{d) } 4 \times \frac{7}{9} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$\text{e) } 17 \times \frac{2}{11} = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

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

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

Write two possible options.

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7

Here are some digit cards.



Use the digit cards to complete the multiplication.

$$\boxed{\phantom{00}} \times \frac{\boxed{\phantom{00}}}{8} = \frac{15}{8} = \boxed{\phantom{00}} \frac{\boxed{\phantom{00}}}{8}$$





# Multiply mixed numbers by integers

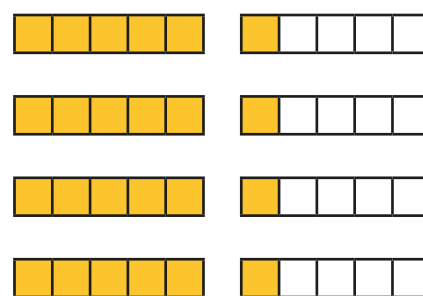
1 Complete the calculations.

a)  $4 \times 1\frac{1}{5}$

$4 \times 1 = \square$

$4 \times \frac{1}{5} = \square$

$\square + \square = \square$

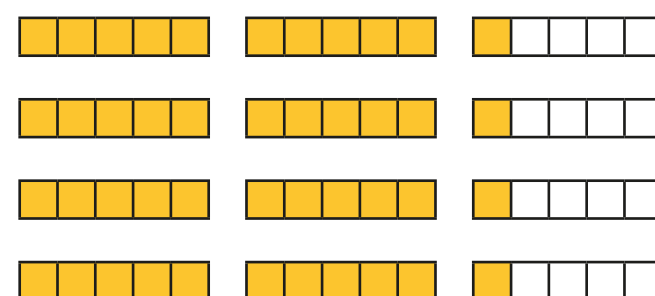


b)  $4 \times 2\frac{1}{5}$

$\square \times 2 = \square$

$4 \times \square = \square$

$\square + \square = \square$

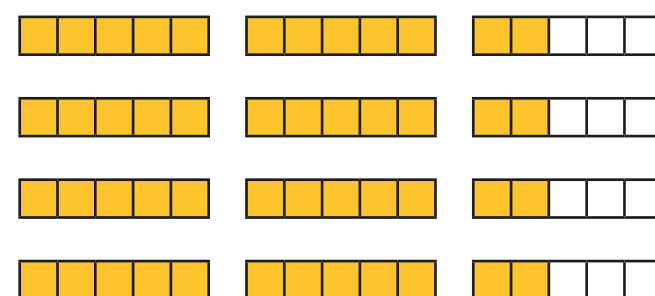


c)  $4 \times 2\frac{2}{5}$

$\square \times \square = \square$

$4 \times \square = \square = \square$

$\square + \square = \square$

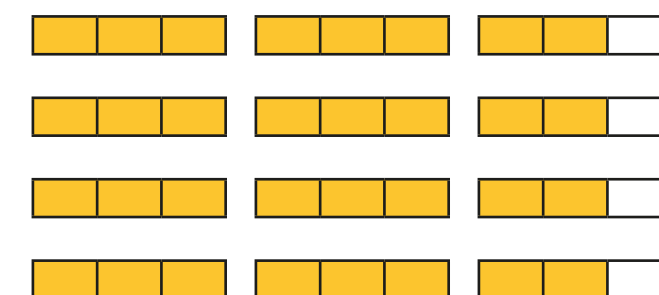


d)  $4 \times 2\frac{2}{3}$

$\square \times \square = \square$

$\square \times \square = \square = \square$

$\square + \square = \square$



2 Complete the multiplications.

a)  $3 \times 8\frac{2}{7} = \square$

d)  $4 \times 6\frac{3}{19} = \square$

b)  $2 \times 12\frac{2}{11} = \square$

e)  $2\frac{2}{25} \times 12 = \square$

c)  $6\frac{2}{11} \times 4 = \square$

f)  $3\frac{1}{15} \times 8 = \square$

What is the same and what is different about your answers?

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3 One bag of potatoes weighs  $1\frac{3}{4}$  kg.

How much do 5 bags of potatoes weigh?



kg

4 Complete the calculations.

a)  $5 \times 2\frac{2}{3} = 10 + \frac{10}{3} = \boxed{\phantom{00}}$

b)  $4\frac{3}{7} \times 5 = 20 + \boxed{\phantom{00}} = \boxed{\phantom{00}}$

c)  $8 \times 2\frac{5}{12} = \boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{00}}$

d)  $7 \times 3\frac{1}{5} = \boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{00}}$

e)  $4\frac{2}{9} \times 8 = \boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{00}}$

f)  $11 \times 4\frac{3}{10} = \boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{00}}$

5

$5 \times 3\frac{2}{11}$  is equal to  
 $3 \times 5\frac{2}{11}$



Do you agree with Ron? \_\_\_\_\_

Explain why.

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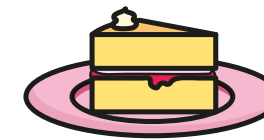
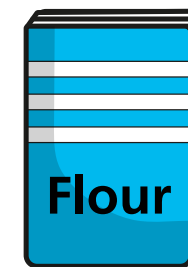
Eva drinks  $3\frac{1}{3}$  litres of water a day.

How many litres of water does she drink in a week?

l

7

Here is a recipe for a birthday cake.



Butter  $1\frac{3}{8}$  kg

Sugar  $1\frac{5}{16}$  kg

Self-raising flour  $2\frac{1}{4}$  kg

6 eggs

a) How much flour is needed for 3 birthday cakes?

kg

b) Dora makes 4 birthday cakes.

How much more butter does she use than sugar?

kg