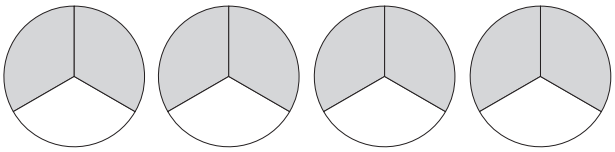
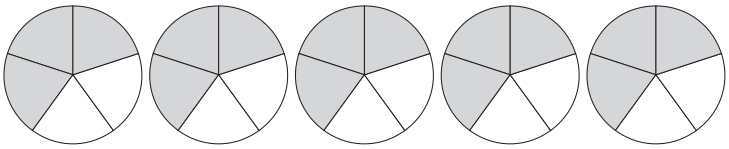
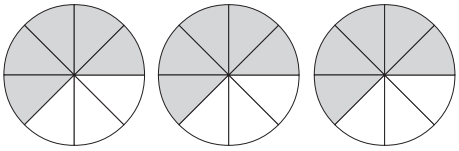
1)

a) 

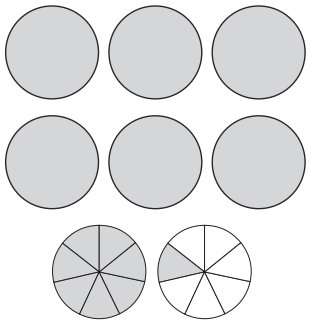
$4 \times \frac{2}{3} = \frac{8}{3}$ or $2\frac{2}{3}$

b) 

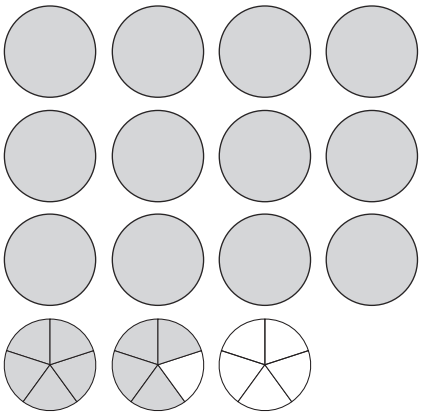
$5 \times \frac{3}{5} = \frac{15}{5}$ or 3

c) 

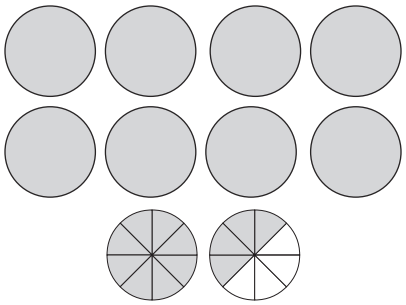
$3 \times \frac{5}{8} = \frac{15}{8}$ or $1\frac{7}{8}$

2) a) 

$2 \times 3\frac{4}{7} = 7\frac{1}{7}$

b) 

$3 \times 4\frac{3}{5} = 13\frac{4}{5}$

c) 

$2 \times 4\frac{6}{8} = 9\frac{1}{2}$

3) a) $3 \times 2\frac{3}{7} = 3 \times \frac{17}{7} = \frac{51}{7}$ or $7\frac{2}{7}$

b) $4 \times 3\frac{3}{4} = 4 \times \frac{15}{4} = \frac{60}{4}$ or 15

1) Each complete whole represents 60 mins. Therefore each 1/6 portion of the whole is worth $10\frac{5}{6}$ mins of a whole is therefore worth 50 minutes.

This diagram is incorrect as each complete whole represents 60 minutes therefore $\frac{3}{4}$ of a whole will represent 45 mins.

2) $5 \times 2\ \frac{4}{6} = 13\frac{1}{3}$

$5 \times 8\ \frac{2}{3} = 43\frac{1}{3}$

$5 \times 4\ \frac{4}{5} = 24$

$5 \times 4\ \frac{4}{5} = 24$ is the odd one out as it gives a whole number answer. Children may also notice various other differences, such as that the denominators in the first two questions are multiples of 3 and the final calculation is a multiple of 5. The first two questions have a 3 in the ones place answer.

1) Answer: She is buying potatoes for 6 classes:

$6 \times 3\frac{4}{7} = 21\frac{3}{7}$

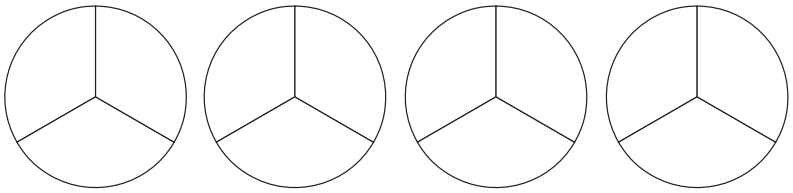
2) a) $6 \times 5\frac{4}{3} = 38$

b) Multiple answers are possible

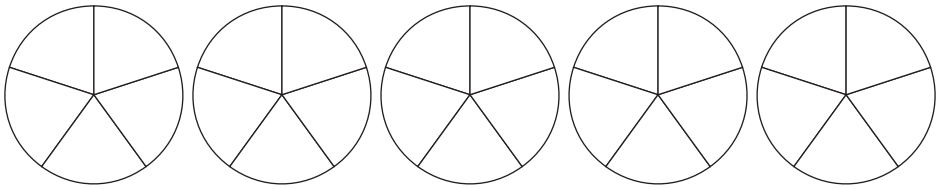
$3 \times 1\frac{2}{4} = 4\frac{1}{4}$

$5 \times 2\ \frac{3}{6} = 22\frac{1}{2}$

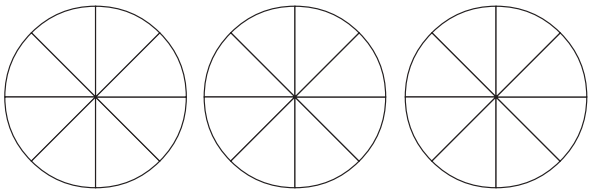
1) This diagram represents an integer being multiplied by a fraction.
Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

a) 

$4 \times \frac{2}{3} = \square$ or $\square\frac{\square}{\square}$

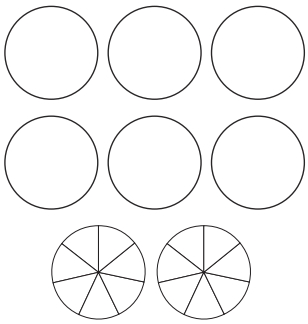
b) 

$5 \times \frac{3}{5} = \square$ or $\square$

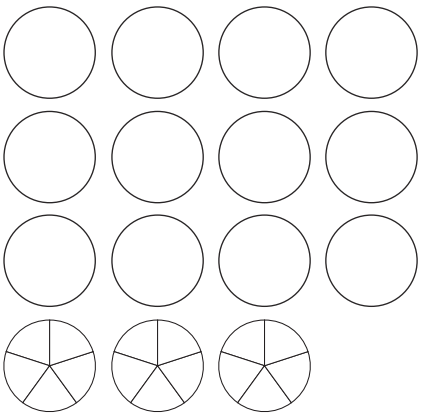
c) 

$3 \times \frac{5}{8} = \square$ or $\square\frac{\square}{\square}$

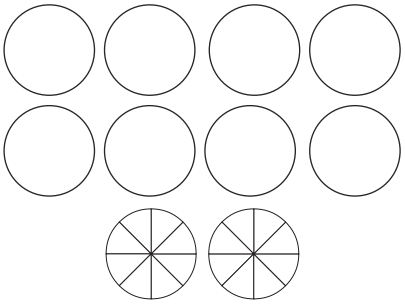
2) This diagram shows the partitioning method of multiplying an integer by a mixed number. Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

a) 

$2 \times 3\frac{4}{7} = \square\frac{\square}{\square}$

b) 

$3 \times 4\frac{3}{5} = \square\frac{\square}{\square}$

c) 

$2 \times 4\frac{6}{8} = \square\frac{\square}{\square}$

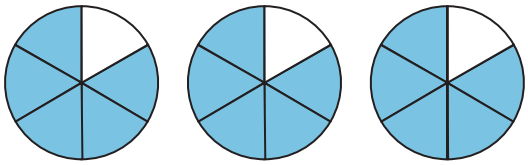
3) Solve these calculations by converting the mixed number to an improper fraction then multiplying:

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

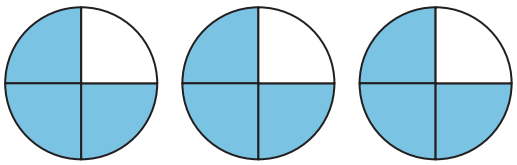
b) $4 \times 3\frac{3}{4} = \square$

1) I am allowed to spend up to one hour watching TV in the evening. On each of Monday, Wednesday and Saturday, I spent 50 minutes out of my allowed hour watching TV.

Which diagram and calculation correctly represents the time I spent watching TV each night? Explain your reasoning.



$3 \times \frac{5}{6} = \frac{15}{6}$ or $2\frac{3}{6}$ or $2\frac{1}{2}$ hours



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

2) Which calculation is the odd one out and why?

$5 \times 2\frac{4}{6} = \square$ $5 \times 8\frac{2}{3} = \square$ $5 \times 4\frac{4}{5} = \square$

1) The school cook is working out how many potatoes she needs to buy to cook dinner for the school. She estimates that each class will eat $3\frac{4}{7}$ kg of potatoes. She buys $21\frac{3}{7}$ kg of potatoes altogether. How many classes is the school cook buying the potatoes for?

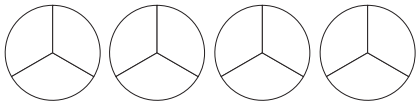
2) Using each of the digits 1 to 6 only once, investigate completing these multiplication statements.

a) $? \times ? \frac{?}{?}$ = greatest possible answer. (Don't make an improper fraction within a mixed number.)

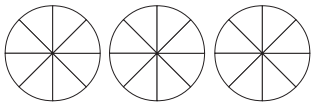
b) $? \times ? \frac{?}{?}$ = mixed number answer with 1/2 as the fraction

1) This diagram represents an integer being multiplied by a fraction.

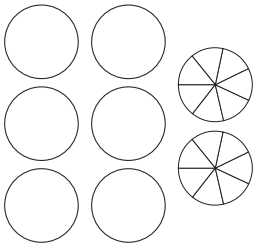
Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

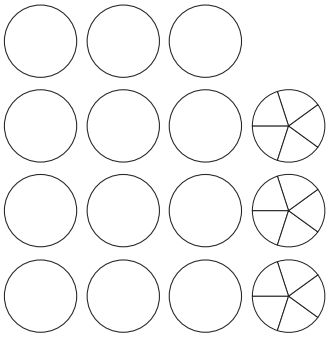
a)  $4 \times \frac{2}{3} =$

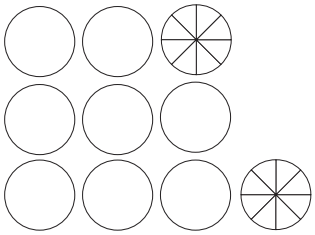
b)  $5 \times \frac{3}{5} =$

c)  $3 \times \frac{5}{8} =$

2) This diagram shows the partitioning method of multiplying an integer by a mixed number. Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

a)  $2 \times 3\frac{4}{7} =$

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

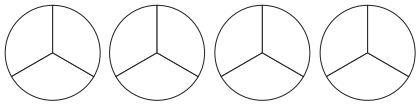
c)  $2 \times 4\frac{6}{8} =$

3) Solve these calculations by converting the mixed number to an improper fraction then multiplying

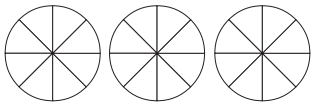
a) $3 \times 2\frac{3}{7} =$ b) $4 \times 3\frac{3}{4} =$

1) This diagram represents an integer being multiplied by a fraction.

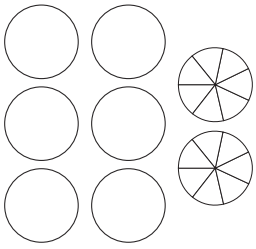
Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

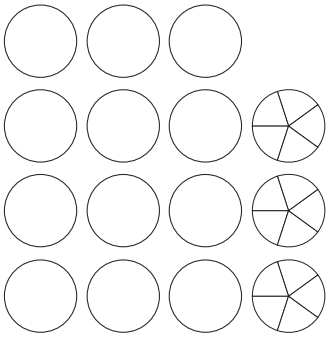
a)  $4 \times \frac{2}{3} =$

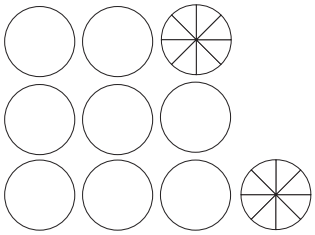
b)  $5 \times \frac{3}{5} =$

c)  $3 \times \frac{5}{8} =$

2) This diagram shows the partitioning method of multiplying an integer by a mixed number. Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

a)  $2 \times 3\frac{4}{7} =$

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

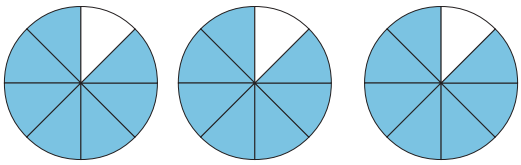
c)  $2 \times 4\frac{6}{8} =$

3) Solve these calculations by converting the mixed number to an improper fraction then multiplying

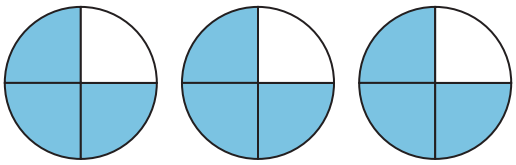
a) $3 \times 2\frac{3}{7} =$ b) $4 \times 3\frac{3}{4} =$

1) I am allowed to spend up to one hour watching TV in the evening. On each of Monday, Wednesday and Saturday, I spent 50 minutes out of my allowed hour watching TV.

Which diagram and calculation correctly represents the time I spent watching TV each night? Explain your reasoning.



$$3 \times \frac{5}{6} = \frac{15}{6} \text{ or } 2\frac{3}{6} \text{ or } 2\frac{1}{2} \text{ hours}$$



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

2) Which calculation is the odd one out and why?

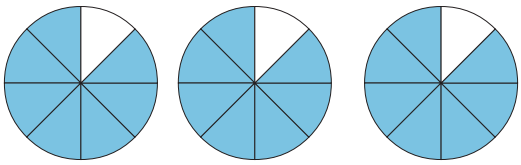
$$5 \times 2\frac{4}{6} =$$

$$5 \times 8\frac{2}{3} =$$

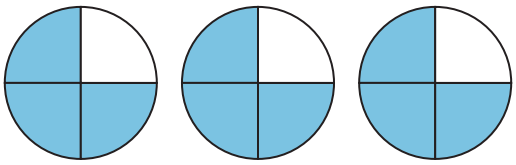
$$5 \times 4\frac{4}{5} =$$

1) I am allowed to spend up to one hour watching TV in the evening. On each of Monday, Wednesday and Saturday, I spent 50 minutes out of my allowed hour watching TV.

Which diagram and calculation correctly represents the time I spent watching TV each night? Explain your reasoning.



$$3 \times \frac{5}{6} = \frac{15}{6} \text{ or } 2\frac{3}{6} \text{ or } 2\frac{1}{2} \text{ hours}$$



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

2) Which calculation is the odd one out and why?

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

$$5 \times 8\frac{2}{3} =$$

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

1) The school cook is working out how many potatoes she needs to buy to cook dinner for the school. She estimates that each class will eat 3 4/7 kg of potatoes. She buys 21 3/7 kg of potatoes altogether. How many classes is the school cook buying the potatoes for?

2) Using each of the digits 1 to 6 only once investigate completing these multiplication statements.

a) ? × ? $\frac{?}{?}$ = greatest possible answer. (Don't make an improper fraction within a mixed number.)

b) ? × ? $\frac{?}{?}$ = mixed number answer with 1/2 as the fraction

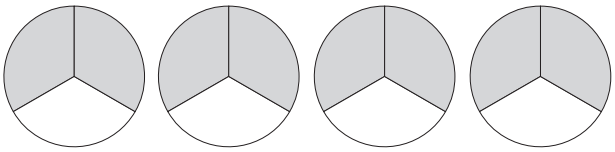
1) The school cook is working out how many potatoes she needs to buy to cook dinner for the school. She estimates that each class will eat 3 4/7 kg of potatoes. She buys 21 3/7 kg of potatoes altogether. How many classes is the school cook buying the potatoes for?

2) Using each of the digits 1 to 6 only once investigate completing these multiplication statements.

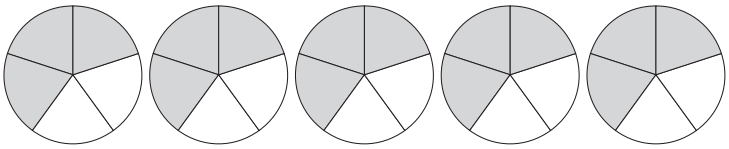
a) ? × ? $\frac{?}{?}$ = greatest possible answer. (Don't make an improper fraction within a mixed number.)

b) ? × ? $\frac{?}{?}$ = mixed number answer with 1/2 as the fraction

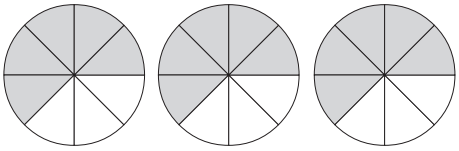
1)

a) 

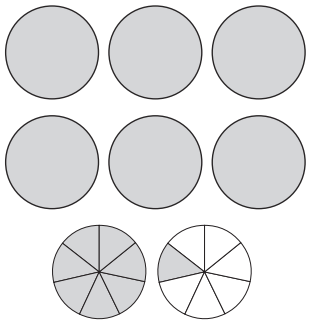
$4 \times \frac{2}{3} = \frac{2}{3}$ *or* $4\frac{2}{3}$

b) 

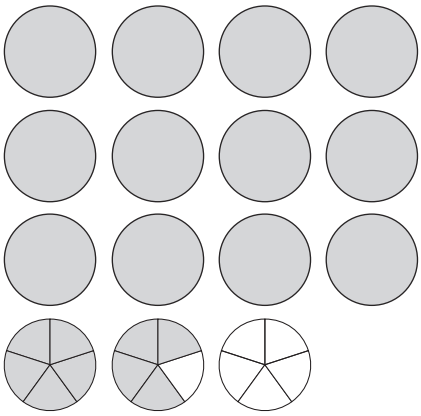
$5 \times \frac{3}{5} = \frac{15}{5}$ *or* 3

c) 

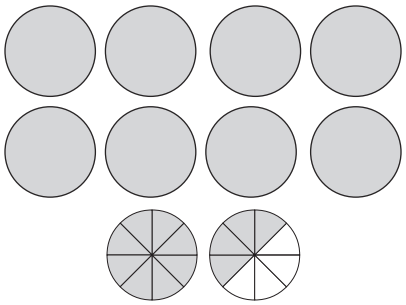
$3 \times \frac{5}{8} = \frac{15}{8}$ *or* $1\frac{7}{8}$

2) a) 

$2 \times 3\frac{4}{7} = 7\frac{1}{7}$

b) 

$3 \times 4\frac{3}{5} = 13\frac{4}{5}$

c) 

$2 \times 4\frac{6}{8} = 9\frac{1}{2}$

3) a) $3 \times 2\frac{3}{7} = 3 \times \frac{17}{7} = \frac{51}{7}$ *or* $7\frac{2}{7}$

b) $4 \times 3\frac{3}{4} = 4 \times \frac{15}{4} = \frac{60}{4}$ *or* 15

1) Each complete whole represents 60 mins. Therefore each 1/6 portion of the whole is worth 10 mins $\frac{5}{6}$ of a whole is therefore worth 50 minutes.

This diagram is incorrect as each complete whole represents 60 minutes therefore $\frac{3}{4}$ of a whole will represent 45 mins.

2) $5 \times 2\ \frac{4}{6} = 13\frac{1}{3}$

$5 \times 8\ \frac{2}{3} = 43\frac{1}{3}$

$5 \times 4\ \frac{4}{5} = 24$

1) Answer: She is buying potatoes for 6 classes:

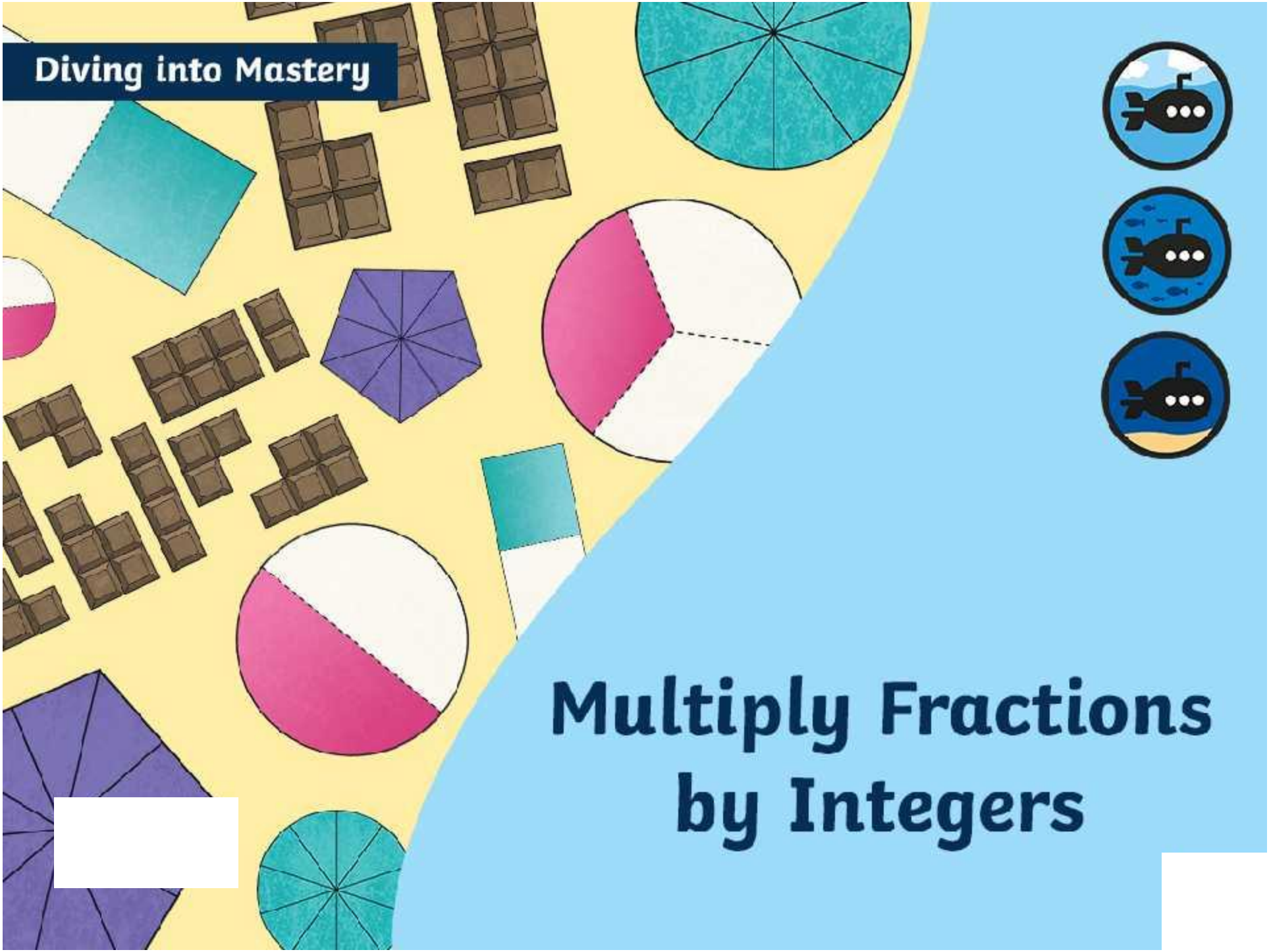
$6 \times 3\frac{4}{7} = 21\frac{3}{7}$

2) a) $6 \times 5\frac{4}{1} = 38$

b) Multiple answers are possible

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

$5 \times 2\ \frac{3}{6} = 22\frac{1}{2}$


Diving into Mastery
Multiply Fractions by Integers

Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:

Diving

Deeper

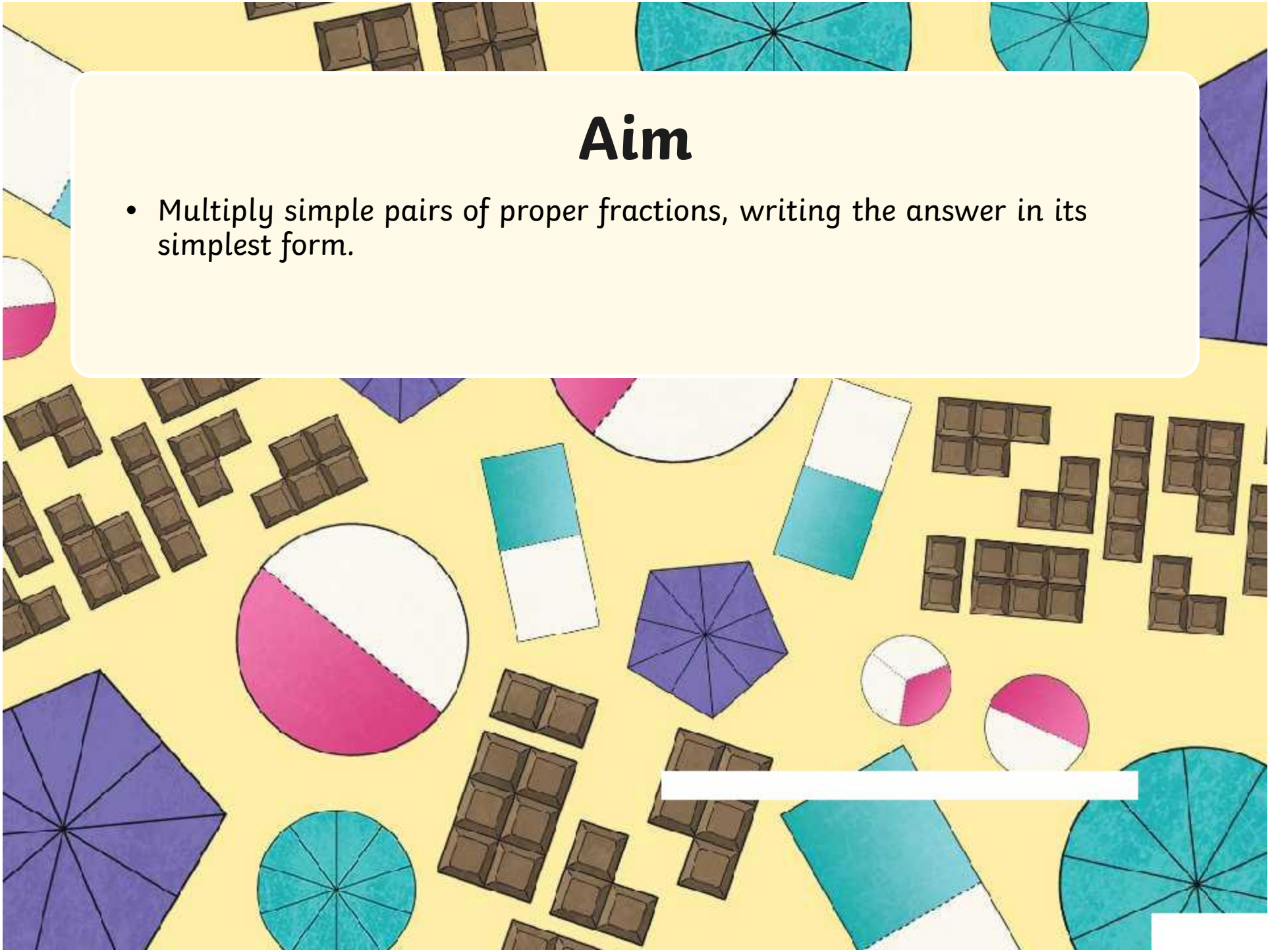
Deepest

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

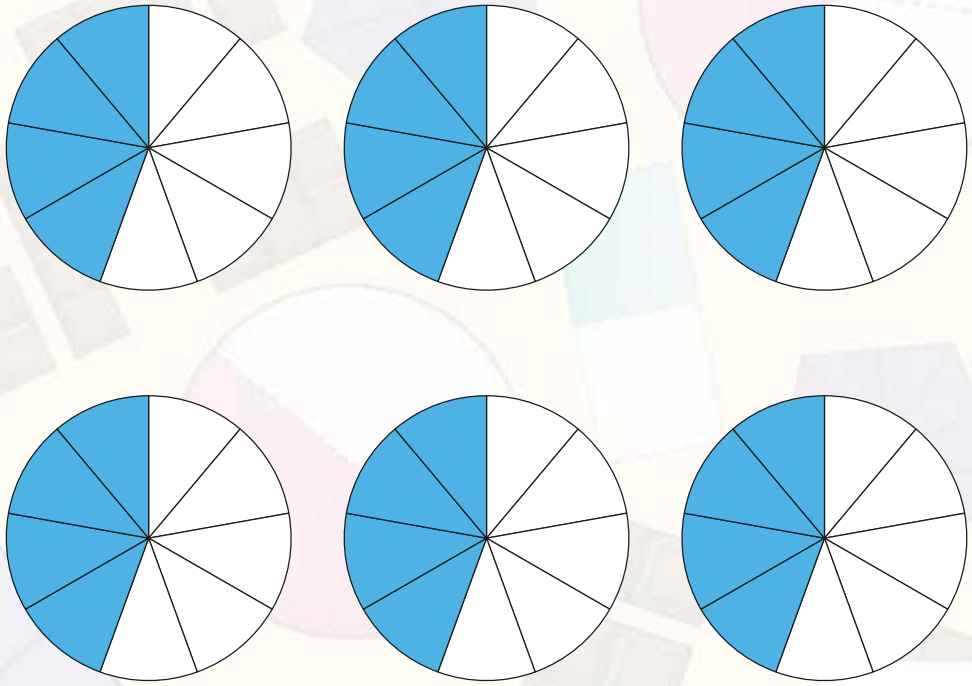
Aim

- Multiply simple pairs of proper fractions, writing the answer in its simplest form.



Multiply Fractions by Integers | Diving

1) This diagram represents an integer being multiplied by a fraction. Give the calculation being represented and solve it.



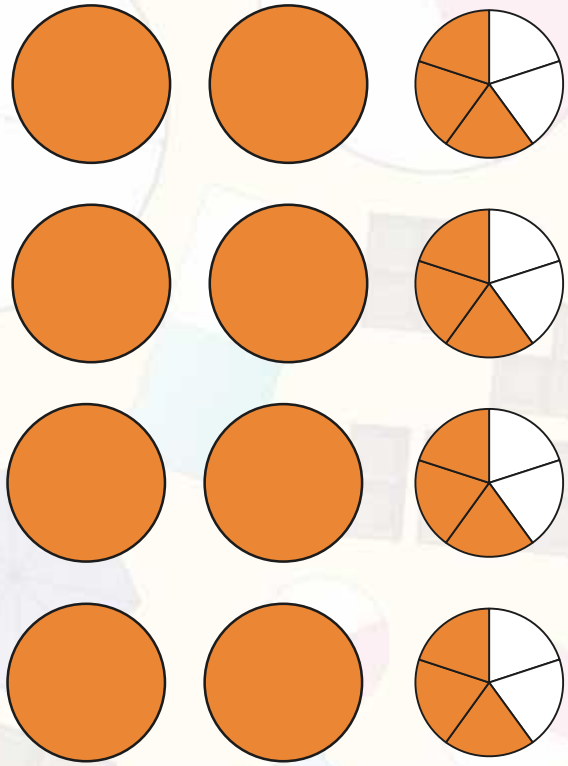
Answers

$$6 \times \frac{4}{9} = \frac{24}{9}$$

$$\text{or } 2\frac{2}{3}$$

Multiply Fractions by Integers | Diving

2) This diagram shows the partitioning method of multiplying an integer by a mixed number. Use the diagram to show the correct answer and write it down as a simplified mixed number.



$$4 \times 2\frac{3}{5} = \boxed{10\frac{2}{5}}$$

Multiply Fractions by Integers | Diving

3) Solve this calculation by converting the mixed number to an improper fraction then multiplying:

$$2 \times 5\frac{2}{8} = 2 \times \frac{42}{8} = \frac{84}{8} \text{ or } 10\frac{4}{8} \text{ or } 10\frac{1}{2}$$

Multiply Fractions by Integers | Deeper

Two children are comparing how many books they have read.

Ania says, "I read $3\frac{7}{8}$ books *every* week for 4 weeks."

Mia says, "I read $4\frac{7}{8}$ books *every* week for 3 weeks."

Ania says:

"I think we have read the same amount. $3\frac{7}{8} \times 4$ must be the same as $4\frac{7}{8} \times 3$."

Do you agree with Ania's statement? Explain why.

Ania's statements is incorrect as $3\frac{7}{8} \times 4 = 15\frac{1}{2}$ whereas $4\frac{7}{8} \times 3 = 14\frac{5}{8}$

Multiply Fractions by Integers | Deepest

Using each of the digits 1-6 only once, investigate completing these multiplication statements.

$? \times ? \ \frac{?}{?}$ = an answer that is between 34 and 35.

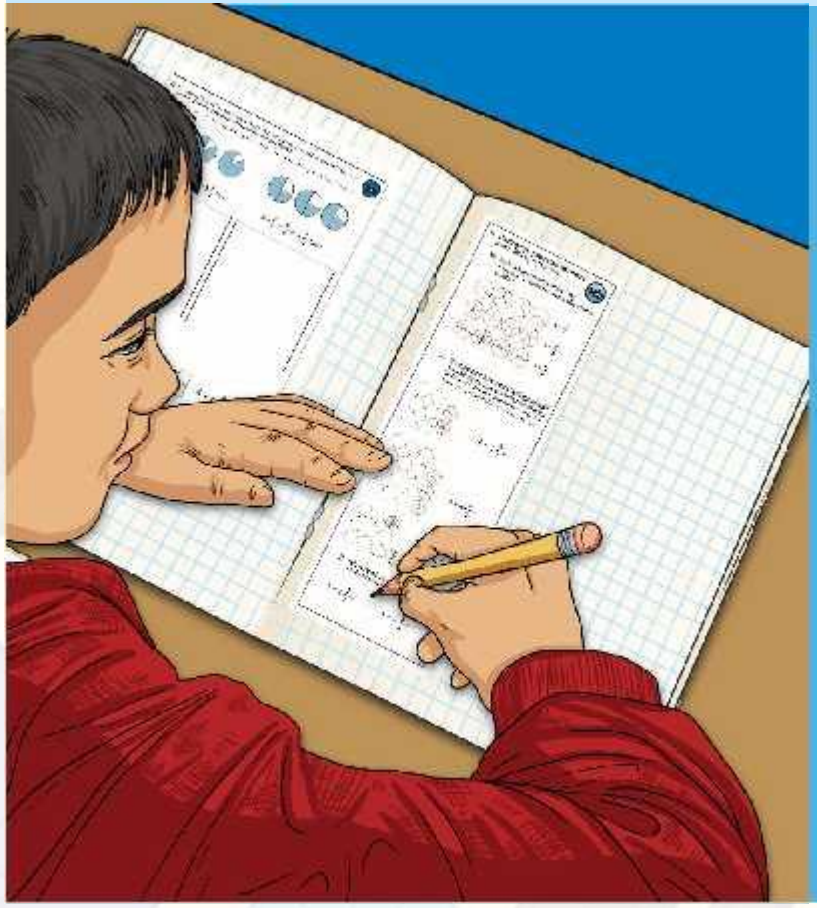
$$6 \times 5\frac{3}{4} = 34\frac{1}{2}$$

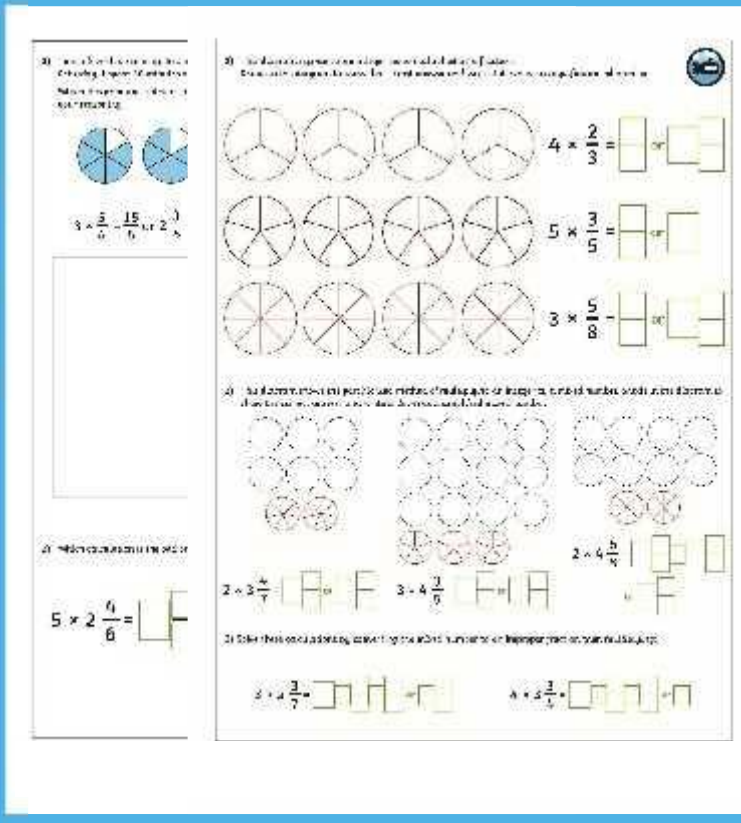
$? \times ? \ \frac{?}{?}$ = a whole number answer (give at least three possibilities).

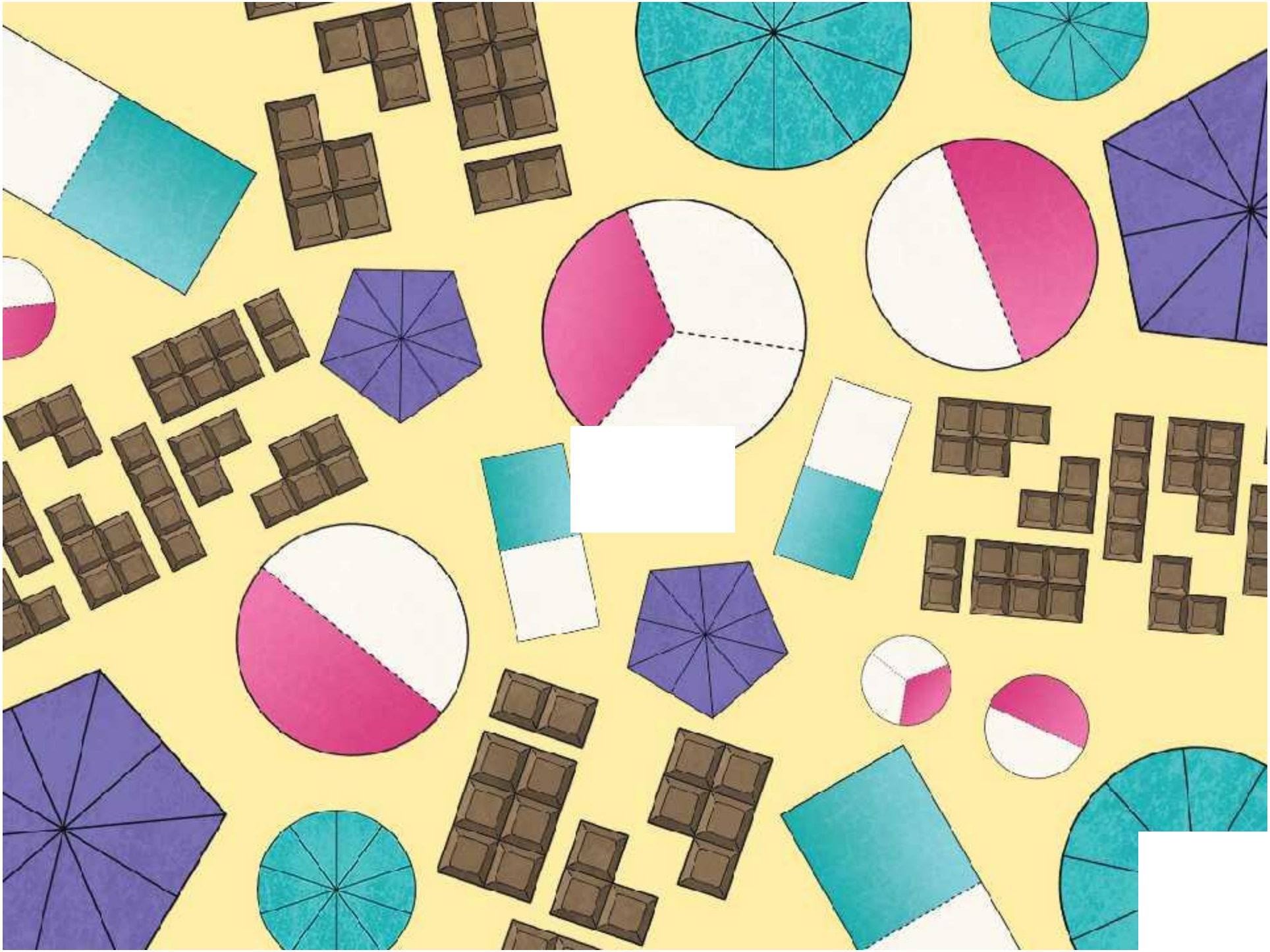
Multiple answers are possible e.g $2 \times 6\frac{3}{6} = 13$

Multiply Fractions by Integers

Dive in by completing your own activity!

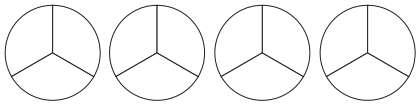




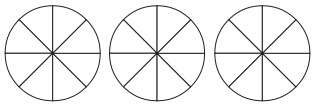


1) This diagram represents an integer being multiplied by a fraction.

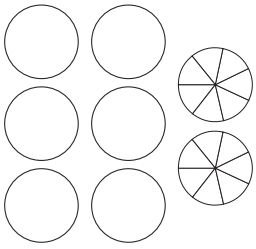
Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

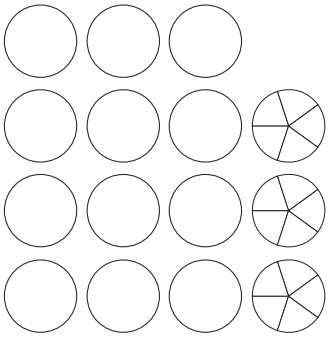
a)  $4 \times \frac{2}{3} =$

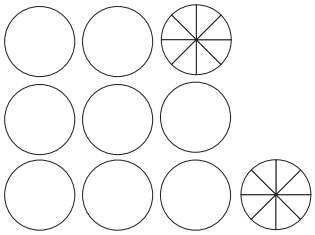
b)  $5 \times \frac{3}{5} =$

c)  $3 \times \frac{5}{8} =$

2) This diagram shows the partitioning method of multiplying an integer by a mixed number. Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

a)  $2 \times 3\frac{4}{7} =$

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

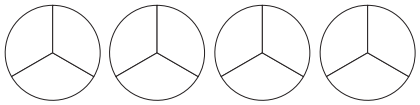
c)  $2 \times 4\frac{6}{8} =$

3) Solve these calculations by converting the mixed number to an improper fraction then multiplying

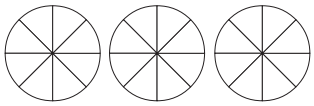
a) $3 \times 2\frac{3}{7} =$ b) $4 \times 3\frac{3}{4} =$

1) This diagram represents an integer being multiplied by a fraction.

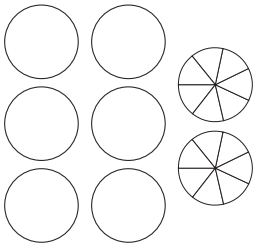
Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

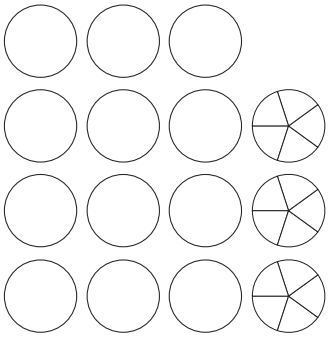
a)  $4 \times \frac{2}{3} =$

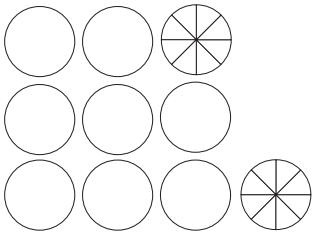
b)  $5 \times \frac{3}{5} =$

c)  $3 \times \frac{5}{8} =$

2) This diagram shows the partitioning method of multiplying an integer by a mixed number. Shade in the diagram to show the correct answer and write it down as a simplified mixed number.

a)  $2 \times 3\frac{4}{7} =$

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

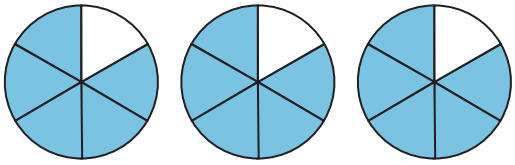
c)  $2 \times 4\frac{6}{8} =$

3) Solve these calculations by converting the mixed number to an improper fraction then multiplying

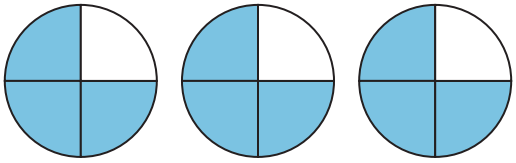
a) $3 \times 2\frac{3}{7} =$ b) $4 \times 3\frac{3}{4} =$

1) I am allowed to spend up to one hour watching TV in the evening. On each of Monday, Wednesday and Saturday, I spent 50 minutes out of my allowed hour watching TV.

Which diagram and calculation correctly represents the time I spent watching TV each night? Explain your reasoning.



$$3 \times \frac{5}{6} = \frac{15}{6} \text{ or } 2\frac{3}{6} \text{ or } 2\frac{1}{2} \text{ hours}$$



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

2) Which calculation is the odd one out and why?

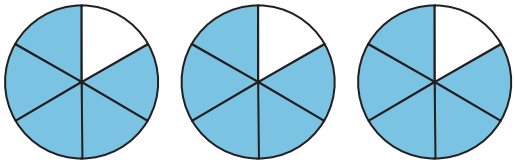
$$5 \times 2\frac{4}{6} =$$

$$5 \times 8\frac{2}{3} =$$

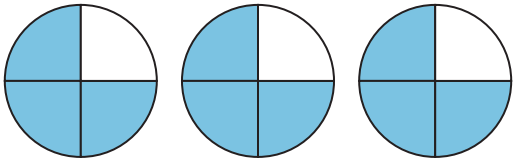
$$5 \times 4\frac{4}{5} =$$

1) I am allowed to spend up to one hour watching TV in the evening. On each of Monday, Wednesday and Saturday, I spent 50 minutes out of my allowed hour watching TV.

Which diagram and calculation correctly represents the time I spent watching TV each night? Explain your reasoning.



$$3 \times \frac{5}{6} = \frac{15}{6} \text{ or } 2\frac{3}{6} \text{ or } 2\frac{1}{2} \text{ hours}$$



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

2) Which calculation is the odd one out and why?

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

$$5 \times 8\frac{2}{3} =$$

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

1) The school cook is working out how many potatoes she needs to buy to cook dinner for the school. She estimates that each class will eat 3 4/7 kg of potatoes. She buys 21 3/7 kg of potatoes altogether. How many classes is the school cook buying the potatoes for?

2) Using each of the digits 1 to 6 only once investigate completing these multiplication statements.

a) ? × ? $\frac{?}{?}$ = greatest possible answer. (Don't make an improper fraction within a mixed number.)

b) ? × ? $\frac{?}{?}$ = mixed number answer with 1/2 as the fraction

1) The school cook is working out how many potatoes she needs to buy to cook dinner for the school. She estimates that each class will eat 3 4/7 kg of potatoes. She buys 21 3/7 kg of potatoes altogether. How many classes is the school cook buying the potatoes for?

2) Using each of the digits 1 to 6 only once investigate completing these multiplication statements.

a) ? × ? $\frac{?}{?}$ = greatest possible answer. (Don't make an improper fraction within a mixed number.)

b) ? × ? $\frac{?}{?}$ = mixed number answer with 1/2 as the fraction