CHAPTER 8

Understanding Fractions

Vocabulary:

proper fractions
improper fractions
mixed numbers
equivalent fractions
lowest equivalent form
simplest form

Chapter Outcomes:

- Develop and apply procedures to solve problems involving fractions and the four operations.

We use fractions in everyday life even though we may not completely realize it. There are parts of a whole everywhere. If you don't believe this, then try baking a cake without using fractions. If it were not for fractions something as simple as baking a cake would be impossible. When you put 4 eggs into the cake batter you are using $\frac{1}{3}$ of a dozen.

Getting Ready for Chapter 8

1. Choose the best term from the box to complete the sentences.

fraction	quarters
numerator	denominator

a) A _____ can name a part of a whole.

b) The number above the fraction bar in a fraction is called the _____.

c) Four equal parts of a whole are called _____.

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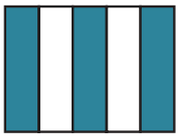
2. What fraction of the shape below is shaded?



3. Write an equivalent fraction for $\frac{3}{5}$.

4. Convert $2\frac{3}{6}$ to an improper fraction.

5. What is $\frac{2}{3}$ of 18?

Represent Fractions

Teaching Point 1:

What is a fraction?

A **fraction** is a number that names one or more parts of a whole that is divided into equal parts. The whole can be an **area or region**, a **set** or **length**.

Part of a region or area

numerator → 3
vinculum →
denominator → 4

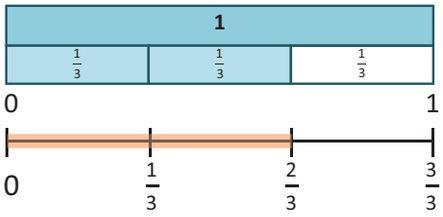
of the **region** is shaded.

Part of a set

There are **4** balls in the **set**.
1 out of the **4** balls is yellow.

$\frac{1}{4}$ of the balls is yellow.

Part of a unit of length

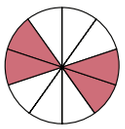


There are **3** parts in the unit of length.
2 out of the **3** parts are shaded.

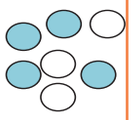
$\frac{2}{3}$ of the number line is shaded.

Activity 1:

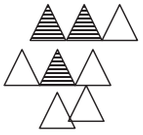
Write the fraction that names the shaded part of each whole.

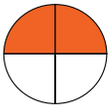
1. 

2. 

3. 

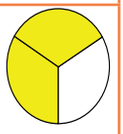
4. 

5. 

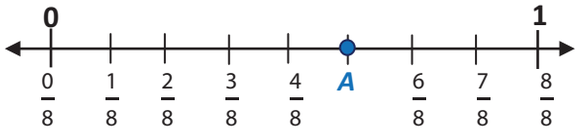
6. 

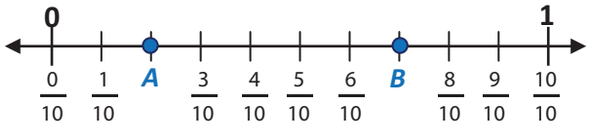
7. 

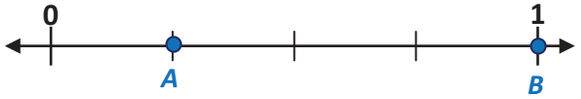
8. 

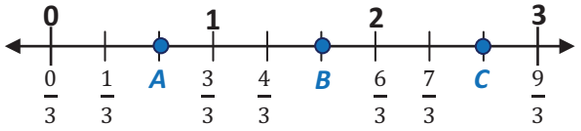
9. 

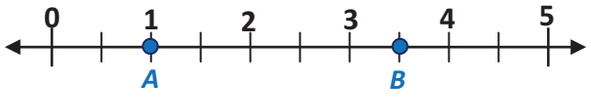
Write the fraction that names each point.

10. 

11. 

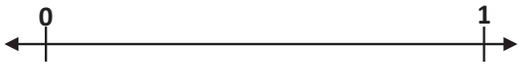
12. 

13. 

14. 

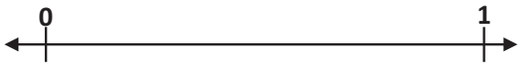
Locate each fraction on each number line below.

15. $\frac{1}{6}$

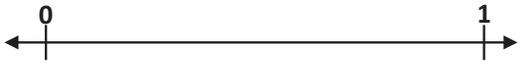


16. $\frac{4}{8}$

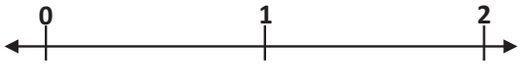
17. $\frac{3}{9}$



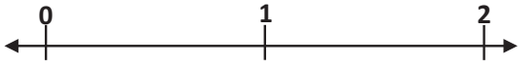
18. $\frac{7}{12}$



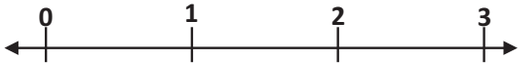
19. $\frac{3}{2}$



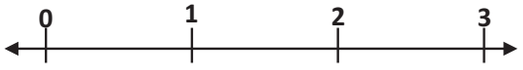
20. $\frac{8}{6}$



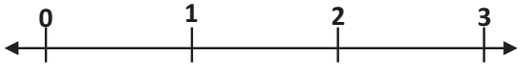
21. $\frac{9}{4}$



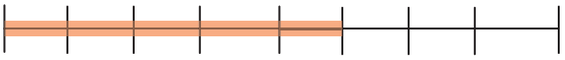
22. $\frac{7}{3}$



23. $\frac{8}{5}$



Write the fraction that names the shaded part.

24. 

25. 

26. 

Activity 2:

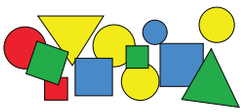
Draw a picture and shade part of it to show each fraction.

1. $\frac{4}{12}$ of a region.

2. 3 out of 6 parts of a set.

3. $\frac{8}{9}$ of a length.

4. What fraction of the shapes below are not circles?



Solve the following problems.

5. Kevin cleans the dog kennel three times a week while his brother cleans it on the other days. What fraction names the part of the week his brother cleans the kennel?

6. Alex and Mark each have a granola bar broken into equal pieces. They each eat one piece, or $\frac{1}{4}$, of their granola bar. How many more pieces altogether do Alex and Mark need to eat to finish both granola bars?

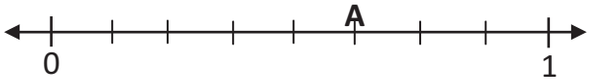
7. Chang has a rectangular flag that is $\frac{3}{10}$ white and the rest of it blue. Draw Chang's flag.

8. In an aquarium $\frac{4}{12}$ of the fishes are orange and the rest are black. What fraction of the fishes are black?

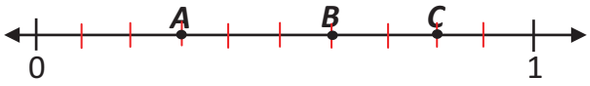
9. Mummy made 10 fried bakes. Leeann ate 2 bakes and her brother ate 3 bakes. What fraction of the fried bakes was left?

10. Mr. Smith stops to buy some doubles for breakfast when he is $\frac{3}{4}$ of the way to work. Show this distance on a number line?

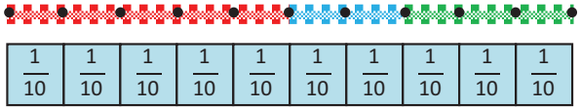
11. Write the fraction that is at A on the number line below.



12. Which letter on the number line below best represents $\frac{6}{10}$?



13. What fraction of the ribbon below is red?



14. Tia has a box of 12 crayons. She gives 4 crayons to her brother and 3 crayons to her sister. What fraction of the crayons does Tia have left?

15. A box contains 4 red pencils and 6 blue pencils. What fraction of the pencils are red?

16. Alisha has a bag with 4 mangoes and 6 oranges. Two of the mangoes are green and the rest are ripe. What fraction of the fruits are ripe mangoes?

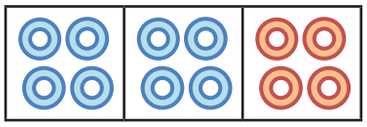
Fraction of a Set

Teaching Point 1:

How can you find the fractional part of a set?

Find $\frac{2}{3}$ of 12.

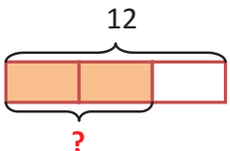
Use objects.



$\frac{2}{3}$ of the buttons are blue

So, $\frac{2}{3}$ of 12 is 8.

Use a model.



The shaded parts of the **bar model** show $\frac{2}{3}$ of the set.

Find $\frac{2}{3}$ of 12.

3 units ⟶ 12

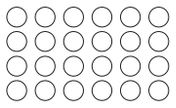
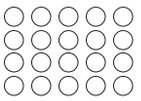
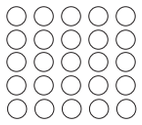
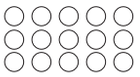
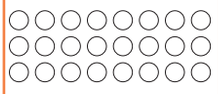
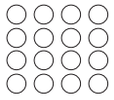
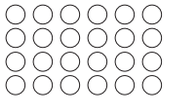
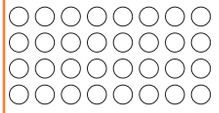
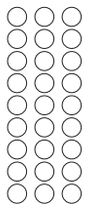
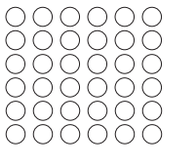
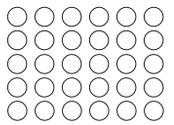
1 unit ⟶ 12 ÷ 3 = 4

2 units ⟶ 4 × 2 = 8

So, $\frac{2}{3}$ of 12 is 8.

Activity 1:

Circle equal groups to help you solve.

1. $\frac{1}{2}$ of 12 	2. $\frac{3}{6}$ of 24 	3. $\frac{3}{5}$ of 20 
4. $\frac{4}{5}$ of 25 	5. $\frac{2}{3}$ of 15 	6. $\frac{5}{8}$ of 24 
7. $\frac{1}{2}$ of 16 	8. $\frac{1}{3}$ of 24 	9. $\frac{3}{8}$ of 32 
10. $\frac{4}{9}$ of 27 	11. $\frac{4}{6}$ of 36 	12. $\frac{2}{5}$ of 30 

13. There are 16 marbles in a box. 4 of the marbles are blue and the rest are green. What fraction of the set of marbles is green?

14. There are 9 roses in a vase. Of the 9 roses, 6 are red and the rest are yellow. What fraction of the roses are red?

15. Jewel bought 12 biscuits packaged in bags of 4. $\frac{3}{4}$ of them were chocolate and the rest of them were vanilla. How many biscuits are vanilla?

16. Jia has 10 bills in her purse. She has four $1 bills and the rest are $5 bills. What fraction of the bills are $5 bills?

Mixed Numbers and Improper Fractions

Teaching Point 1:

How can different fractions name the same amount?

There is more than 1 orange.

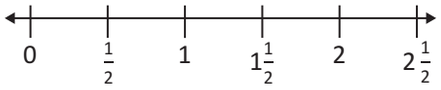
There are 2 whole oranges and $\frac{1}{2}$ orange.

$$2 + \frac{1}{2} = 2\frac{1}{2}$$

$2\frac{1}{2}$ is a **mixed number**.

You can represent mixed numbers in different ways.

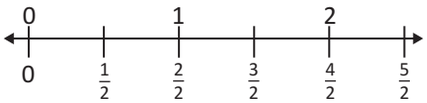
Mixed numbers can be represented on a number line.



An **improper fraction** has a **numerator** that is greater than its **denominator**. Mixed numbers can be written as improper fractions.

$$\frac{2}{2} + \frac{2}{2} + \frac{1}{2} = \frac{5}{2}$$

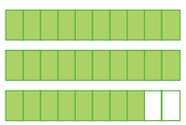
Improper fractions can be represented on a number line.

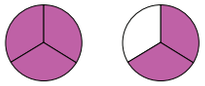


Activity 1:

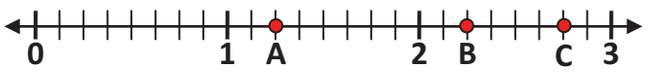
Write an improper fraction and a mixed number for the shaded portion of each model.

1. 

2. 

3. 

What improper fraction and mixed number represent each point on the number line?



4. Point A

5. Point B

6. Point C

Draw a number line to show each set of numbers. Then order the number from least to greatest.

7. $\frac{3}{2}, \frac{9}{2}, \frac{5}{2}$	8. $2\frac{1}{4}, 1\frac{3}{4}, 2\frac{2}{4}$
9. $\frac{11}{5}, \frac{7}{5}, \frac{9}{5}$	10. $2\frac{3}{10}, 1\frac{4}{10}, \frac{11}{10}$
11. $1\frac{5}{6}, \frac{13}{6}, 2\frac{2}{6}$	12. $\frac{13}{8}, \frac{9}{8}, 1\frac{3}{8}$

13. Dexter needs 6 strips of wood to make a frame. Each strip must be $\frac{1}{4}$ metre long. How much wood should Dexter buy to make the frame?

14. How many eighths are there in $2\frac{3}{8}$?

15. At the end of a party, $2\frac{2}{3}$ sponge cakes and $1\frac{1}{3}$ chocolate cakes remained. Mother cut the cakes into $\frac{1}{3}$ pieces. How many pieces did she get?

Teaching Point 2:

How are mixed numbers and improper fractions related?

Write $\frac{5}{2}$ as a mixed number.

The **fraction bar** means 'divided by'.

So, $\frac{5}{2}$ means 5 divided by 2.

Divide the numerator by the denominator.

whole number → 2 **R** 1 ← numerator

$2 \overline{)\,5}$

$-\,4$

1

denominator

Use the quotient and the remainder to write a mixed number.

So, $\frac{5}{2} = 2\frac{1}{2}$.

Write $2\frac{1}{2}$ as an improper fraction.

$2\frac{1}{2} = \frac{5}{2}$ ← total number of parts

← number of parts in the whole

First, multiply the denominator, or the number of parts in the whole, by the whole number.

$2 \times 2 = 4$

Then, add the numerator to your product.

$4 + 1 = 5$

So, $2\frac{1}{2} = \frac{5}{2}$.

Activity 2:

Write each mixed number as an improper fraction.

1. $3\frac{1}{2}$	**2.** $2\frac{3}{6}$	**3.** $5\frac{3}{4}$
4. $2\frac{4}{7}$	**5.** $1\frac{6}{8}$	**6.** $6\frac{2}{3}$
7. $3\frac{11}{12}$	**8.** $4\frac{1}{9}$	**9.** $2\frac{1}{5}$
10. $1\frac{7}{12}$	**11.** $3\frac{1}{4}$	**12.** $4\frac{2}{10}$

Write each improper fraction as a mixed number.

13. $\frac{7}{2}$	**14.** $\frac{12}{5}$	**15.** $\frac{17}{3}$
16. $\frac{25}{6}$	**17.** $\frac{21}{8}$	**18.** $\frac{32}{7}$
19. $\frac{51}{10}$	**20.** $\frac{19}{4}$	**21.** $\frac{15}{9}$
22. $\frac{31}{12}$	**23.** $\frac{11}{3}$	**24.** $\frac{22}{4}$

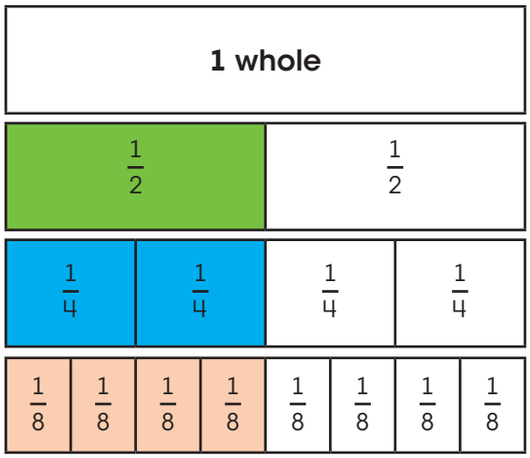
25. Kerry Ann needs to make a banner that is $2\frac{2}{4}$ metres long. She has strips of crepe paper that are $\frac{1}{4}$ metres long. How many $\frac{1}{4}$ strips will she need to make the banner?

26. $7\frac{3}{4}$ litres of water were consumed during a cricket match. If each player drank $\frac{1}{4}$ litre of water, how many players drank water?

Equivalent Fractions

Teaching Point 1:

How can two or more fractions name the same part of a whole?



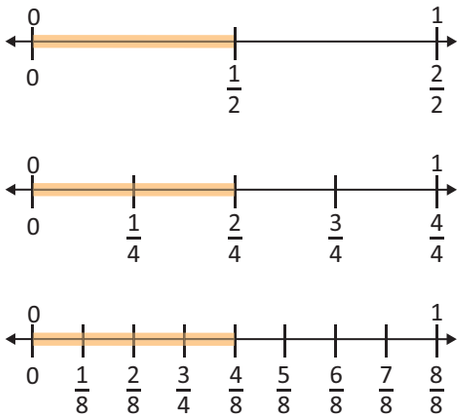
The fractions $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$ name the same part of the whole.

$\frac{1}{2}$ is **equal** to $\frac{2}{4}$ and $\frac{1}{2}$ is also **equal** to $\frac{4}{8}$.

So, $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$ are equivalent fractions.

Equivalent fractions are different fractions that name the same part of a whole.

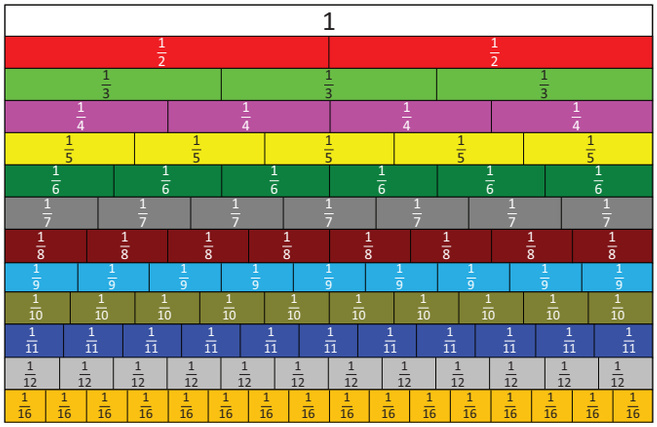
The number lines show equivalent fractions.



The number lines show $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$.

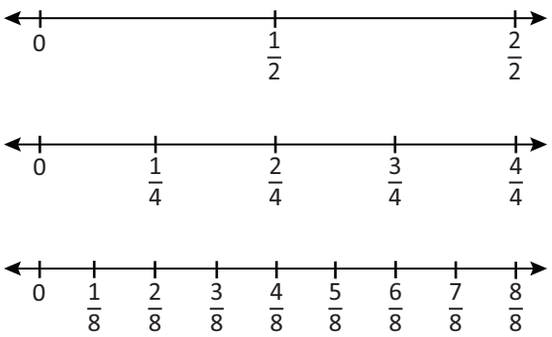
Activity 1:

Use the fraction chart below to complete the equivalent fractions.



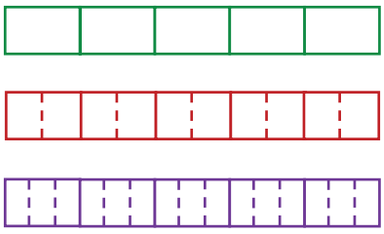
1. $\frac{1}{2} = \frac{\square}{6}$	**2.** $\frac{1}{8} = \frac{\square}{16}$	**3.** $\frac{2}{3} = \frac{\square}{6}$
4. $\frac{1}{4} = \frac{\square}{12}$	**5.** $\frac{2}{4} = \frac{\square}{2}$	**6.** $\frac{1}{3} = \frac{\square}{9}$
7. $\frac{2}{3} = \frac{\square}{12}$	**8.** $\frac{2}{4} = \frac{\square}{2}$	**9.** $\frac{1}{3} = \frac{\square}{9}$
10. $\frac{2}{5} = \frac{\square}{10}$	**11.** $\frac{6}{12} = \frac{\square}{2}$	**12.** $\frac{3}{8} = \frac{\square}{16}$

Use the number lines to find the equivalent fractions.



13. $\frac{1}{2} = \frac{\square}{8}$	**14.** $\frac{2}{4} = \frac{\square}{8}$	**15.** $\frac{3}{4} = \frac{\square}{8}$
16. $\frac{\square}{4} = \frac{2}{8}$	**17.** $\frac{\square}{4} = \frac{6}{8}$	**18.** $\frac{\square}{2} = \frac{2}{4}$

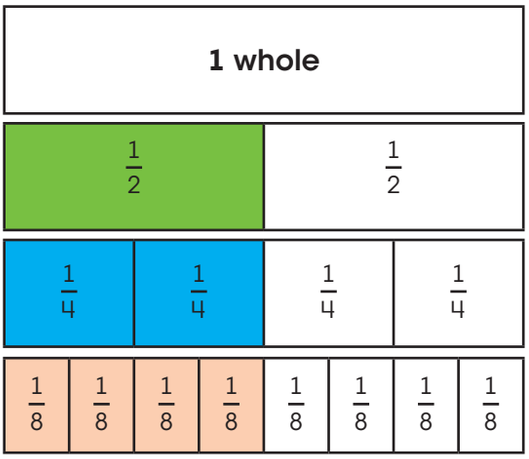
Use the fraction strips to find equivalent fractions.



19. $\frac{2}{5} = \frac{\square}{10}$	**20.** $\frac{\square}{5} = \frac{9}{15}$	**21.** $\frac{4}{5} = \frac{\square}{15}$

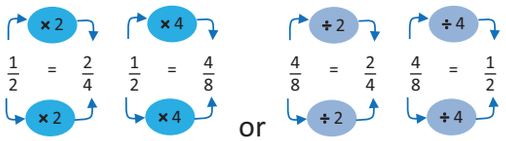
Teaching Point 2:

How can you use multiplication to find equivalent fractions?



The fraction strips show that

$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$ or $\frac{4}{8} = \frac{2}{4} = \frac{1}{2}$.



You can **multiply** or **divide** the numerator and denominator of a fraction by the same number to get **equivalent fractions**.

Activity 2:

Write two equivalent fractions for each fraction.

1. $\frac{1}{4}$	**2.** $\frac{1}{2}$	**3.** $\frac{2}{5}$
4. $\frac{2}{3}$	**5.** $\frac{1}{6}$	**6.** $\frac{1}{7}$
7. $\frac{2}{6}$	**8.** $\frac{3}{8}$	**9.** $\frac{3}{9}$
10. $\frac{1}{9}$	**11.** $\frac{3}{4}$	**12.** $\frac{2}{5}$

Find the missing numerator or denominator to make the fractions equivalent.

13. $\frac{4}{5} = \frac{\square}{10}$	**14.** $\frac{\square}{3} = \frac{8}{12}$	**15.** $\frac{3}{8} = \frac{6}{\square}$
16. $\frac{4}{6} = \frac{\square}{18}$	**17.** $\frac{\square}{7} = \frac{2}{14}$	**18.** $\frac{6}{10} = \frac{18}{\square}$
19. $\frac{3}{7} = \frac{\square}{28}$	**20.** $\frac{8}{24} = \frac{1}{\square}$	**21.** $\frac{6}{21} = \frac{\square}{7}$
22. $\frac{7}{10} = \frac{21}{\square}$	**23.** $\frac{5}{\square} = \frac{20}{36}$	**24.** $\frac{\square}{63} = \frac{7}{9}$
25. $\frac{2}{3} = \frac{\square}{21}$	**26.** $\frac{4}{\square} = \frac{8}{12}$	**27.** $\frac{5}{6} = \frac{15}{\square}$

Activity 3:

Solve the problems below.

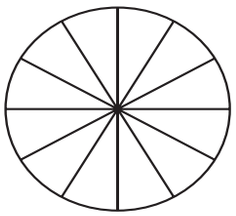
1. Where would $\frac{2}{3}$ be on the number line below?

2. The table below shows equivalent fractions. Which fraction completes the table?

$\frac{3}{5}$	$\frac{6}{10}$	$\frac{9}{15}$	

3. Kareem lives $\frac{4}{10}$ of a kilometre from the mall. His friend Bobby lives $\frac{1}{5}$ of a kilometre, and his other friend Jeremy lives $\frac{2}{5}$ of a kilometre from the mall. Who lives the same distance from the mall as Kareem?

4. A pizza is cut into 12 slices. Samantha ate $\frac{2}{3}$ of the pizza. Shade the amount of pizza Samantha ate.



5. Mark got 9 out of 10 test items correct. What is his score on the test out of 20?

6. The figure below is divided into equal parts.

How many more parts need to be shaded to have $\frac{3}{4}$ of the figure shaded?

7. Mr. James cuts a pizza in half. He cuts each half into 2 equal pieces and then each piece into 3 equal slices. He served 8 slices. What fraction of the pizza did Mr. Francis serve?

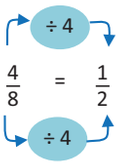
Lowest Equivalent Form

Teaching Point 1:

How can you write a fraction in its lowest equivalent form?

What is the simplest fraction equivalent to $\frac{4}{8}$?

Use division to write a fraction in its lowest equivalent form.



The lowest equivalent form of $\frac{4}{8}$ is $\frac{1}{2}$.

$\frac{1}{2}$ is the **simplest form** of $\frac{4}{8}$.

Writing a fraction in its lowest equivalent form is one way to "**write a fraction in its simplest form**".

Activity 1:

Write each fraction in its simplest form.

1. $\frac{4}{6}$	2. $\frac{10}{15}$	3. $\frac{12}{18}$
4. $\frac{6}{8}$	5. $\frac{9}{21}$	6. $\frac{2}{6}$
7. $\frac{40}{50}$	8. $\frac{12}{24}$	9. $\frac{9}{18}$

10. Fifteen out of 25 students in Mr. Ali's class are girls. In lowest equivalent form, what fraction of the class is girls?

Compare and Order Fractions

Teaching Point 1:

How can you compare fractions?

Daddy has two pieces of wood. One is $\frac{1}{4}$ metre long and the other is $\frac{5}{8}$ metres long. Which piece of wood is longer?

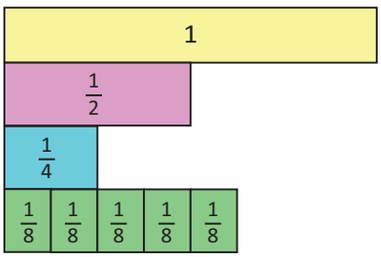
Use benchmark fractions.

Use fraction strips to compare both fractions to $\frac{1}{2}$.

$\frac{1}{4} < \frac{1}{2}$

$\frac{5}{8} > \frac{1}{2}$

So, $\frac{5}{8} > \frac{1}{4}$



How many eighths make $\frac{1}{2}$?

$\frac{4}{8}$ is equal to $\frac{1}{2}$. So, $\frac{5}{8} > \frac{1}{4}$.

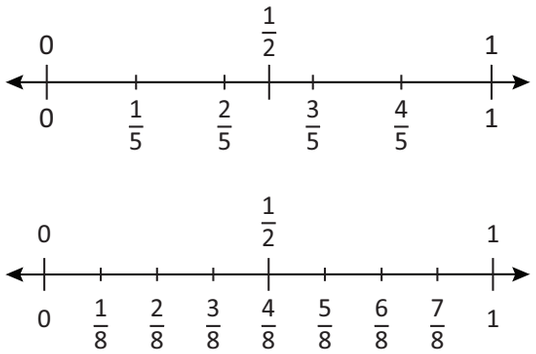
Activity 1:

Compare fractions using benchmarks. Write < or >.

1. $\frac{4}{6} \bigcirc \frac{2}{10}$	**2.** $\frac{1}{4} \bigcirc \frac{2}{3}$	**3.** $\frac{2}{5} \bigcirc \frac{5}{10}$
4. $\frac{7}{9} \bigcirc \frac{3}{8}$	**5.** $\frac{11}{2} \bigcirc \frac{4}{8}$	**6.** $\frac{5}{8} \bigcirc \frac{2}{5}$
7. $\frac{4}{12} \bigcirc \frac{7}{3}$	**8.** $\frac{5}{7} \bigcirc \frac{1}{3}$	**9.** $\frac{3}{4} \bigcirc \frac{5}{12}$
10. $\frac{2}{6} \bigcirc \frac{6}{10}$	**11.** $\frac{8}{10} \bigcirc \frac{3}{4}$	**12.** $\frac{7}{4} \bigcirc \frac{7}{8}$

Find the numerator that makes each statement true.

13. $\frac{4}{5} > \frac{\square}{10}$	**14.** $\frac{2}{3} > \frac{\square}{12}$	**15.** $\frac{3}{8} < \frac{\square}{7}$
16. $\frac{4}{6} > \frac{\square}{9}$	**17.** $\frac{2}{7} > \frac{\square}{14}$	**18.** $\frac{6}{10} > \frac{18}{\square}$
19. $\frac{10}{12} > \frac{\square}{4}$	**20.** $\frac{2}{5} > \frac{\square}{12}$	**21.** $\frac{4}{15} > \frac{\square}{6}$



22. Use the number lines above to compare $\frac{3}{5}$ and $\frac{2}{8}$.

23. Use the number lines above. When two fractions are between 0 and $\frac{1}{2}$ how do you know which fraction is greater?

24. Maria ate $\frac{4}{12}$ of a pizza and her brother, Jamie ate $\frac{3}{6}$ of a pizza of the same size. Who ate more pizza?

25. Arianne read $\frac{8}{10}$ of a book and Leanne read $\frac{2}{5}$ of the same book. Which girl read more of the book?

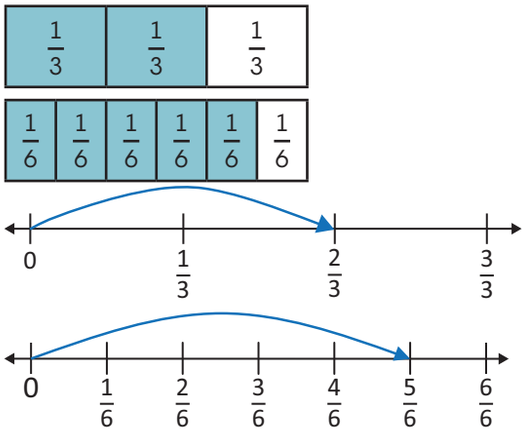
Teaching Point 2:

How can you compare fractions?

In a box of cupcakes $\frac{2}{3}$ are chocolate and $\frac{5}{6}$ are vanilla. Are there more chocolate or vanilla cupcakes?

Compare $\frac{2}{3}$ and $\frac{5}{6}$.

Use a model.



So, $\frac{2}{3} < \frac{5}{6}$.

Use equivalent fractions with the same denominator.

6 is a **multiple** of 3. We can use 6 as the denominator.

$$\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$$

Since $\frac{5}{6} > \frac{4}{6}$, there are more vanilla cupcakes than chocolate cupcakes.

Activity 2:

Compare the fractions. Write <, > or =.

1.	$\frac{1}{2} \bigcirc \frac{4}{6}$	**2.**	$\frac{3}{4} \bigcirc \frac{2}{8}$	**3.**	$\frac{3}{5} \bigcirc \frac{4}{10}$
4.	$\frac{4}{9} \bigcirc \frac{2}{3}$	**5.**	$\frac{1}{7} \bigcirc \frac{2}{14}$	**6.**	$\frac{6}{8} \bigcirc \frac{2}{4}$
7.	$\frac{3}{12} \bigcirc \frac{1}{6}$	**8.**	$\frac{5}{7} \bigcirc \frac{10}{21}$	**9.**	$\frac{2}{4} \bigcirc \frac{4}{12}$
10.	$\frac{3}{5} \bigcirc \frac{12}{20}$	**11.**	$\frac{8}{10} \bigcirc \frac{3}{4}$	**12.**	$\frac{7}{9} \bigcirc \frac{1}{2}$

Teaching Point 3:

How can you compare fractions?

Which is greater, $\frac{2}{3}$ *or* $\frac{3}{4}$?

Compare $\frac{2}{3}$ and $\frac{3}{4}$.

Use equivalent fractions with common denominators.

Find common multiples for 3 and 4.

Multiples of 3 are: 3, 6, 9, (12), 15...

Multiples of 4 are: 4, 8, (12)...

12 is a **common multiple** of 3 and 4. We can use 12 as a **common denominator**.

$$\frac{2 \times 4}{3 \times 4} = \frac{8}{12} \text{ and } \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$$

Since, $\frac{8}{12} < \frac{9}{12}$. Then, $\frac{2}{3} > \frac{3}{4}$.

Activity 3:

Compare the fractions. Write < or >.

1. $\frac{1}{2} \bigcirc \frac{2}{3}$	**2.** $\frac{3}{4} \bigcirc \frac{4}{5}$	**3.** $\frac{3}{5} \bigcirc \frac{1}{2}$
4. $\frac{4}{6} \bigcirc \frac{3}{4}$	**5.** $\frac{3}{7} \bigcirc \frac{2}{3}$	**6.** $\frac{6}{8} \bigcirc \frac{2}{3}$
7. $\frac{3}{4} \bigcirc \frac{5}{7}$	**8.** $\frac{3}{7} \bigcirc \frac{1}{3}$	**9.** $\frac{2}{4} \bigcirc \frac{5}{9}$
10. $\frac{3}{6} \bigcirc \frac{4}{9}$	**11.** $\frac{8}{10} \bigcirc \frac{3}{4}$	**12.** $\frac{6}{8} \bigcirc \frac{8}{10}$

Solve the problems.

13. Lennie had a carton of orange juice and a carton of apple juice. He drank $\frac{1}{5}$ of the orange juice and $\frac{3}{10}$ of the apple juice. Which carton has more juice left?

14. Which fraction below is **NOT greater** than $\frac{1}{2}$?

a) $\frac{7}{8}$ b) $\frac{4}{6}$

c) $\frac{3}{5}$ d) $\frac{5}{12}$

15. Jamie ran $\frac{3}{4}$ km on Sunday and $\frac{2}{3}$ km on Monday. On which day did Jamie run farther?

16. One-third of a garden has lettuce. Four twelfths of the same garden has peppers. Which fraction of the garden is smaller?

17. Mrs. Smith has 24 cupcakes. She sold $\frac{1}{3}$ of them on Monday and $\frac{2}{6}$ of them on Tuesday. On which day did she sell more cupcakes?

18. Mickey has one hour to get ready for school. He spends $\frac{3}{6}$ of the time taking a bath and $\frac{1}{4}$ of the time eating breakfast. Does Mickey spend more time taking a bath or eating breakfast?

19. Adanna eats $\frac{2}{5}$ of a pizza. Ricardo eats $\frac{1}{3}$ of the same pizza. Who ate more of the pizza?

Pizza 1 **Pizza 2**

20. Pizza 1 and Pizza 2 are the same size. If seven slices of Pizza 1 and five slices of Pizza 2 were eaten, which had more pizza left?

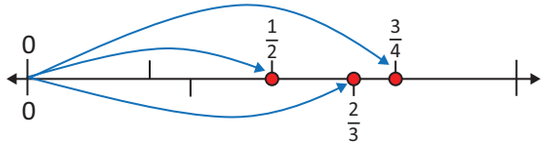
Teaching Point 4:

How can you order fractions?

Order the fractions $\frac{2}{3}$, $\frac{1}{2}$ and $\frac{3}{4}$ from least to greatest ?

Compare $\frac{2}{3}$, $\frac{1}{2}$ and $\frac{3}{4}$.

Use a number line.



So, the fractions in order from least to greatest is: $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}$.

Use equivalent fractions with common denominators.

Find common multiples for 2, 3 and 4.

Multiples of 2 are: 2, 4, 6, 8, 10, 12 ...

Multiples of 3 are: 3, 6, 9, 12, 15...

Multiples of 4 are: 4, 8, 12 ...

12 is a **common multiple** of 2, 3 and 4. We can use 12 as a **common denominator**.

$\frac{2 \times 3}{3 \times 4} = \frac{8}{12}$, $\frac{1 \times 6}{2 \times 6} = \frac{6}{12}$ and $\frac{3 \times 3}{4 \times 3} = \frac{9}{12}$

So, $\frac{1}{2}$ is the **smallest** fraction, and $\frac{3}{4}$ is the **largest** fraction.

The fractions in order from least to greatest is $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}$.

Activity 4:

Order the fractions from least to greatest.

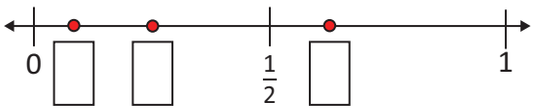
1. $\frac{1}{2}, \frac{2}{3}, \frac{3}{5}$	**2.** $\frac{5}{10}, \frac{1}{3}, \frac{3}{5}$
3. $\frac{3}{4}, \frac{7}{8}, \frac{4}{6}$	**4.** $\frac{2}{3}, \frac{1}{4}, \frac{5}{6}$
5. $\frac{1}{2}, \frac{2}{5}, \frac{4}{10}$	**6.** $\frac{4}{6}, \frac{7}{12}, \frac{5}{10}$
7. $\frac{1}{8}, \frac{3}{6}, \frac{7}{12}$	**8.** $\frac{3}{4}, \frac{7}{8}, \frac{1}{5}$
9. $\frac{3}{8}, \frac{2}{5}, \frac{2}{10}$	**10.** $\frac{3}{5}, \frac{2}{4}, \frac{1}{3}$

Solve the problems below.

11. Anton rode his bike $\frac{4}{6}$ km on Monday, $\frac{6}{12}$ km on Tuesday and $\frac{5}{8}$ km on Wednesday. Which day did he ride the farthest?

12. Alana has done $\frac{3}{4}$ of her Mathematics homework, $\frac{2}{3}$ of her Language homework and $\frac{4}{8}$ of her Science homework. Which subject is most complete?

13. Some students voted for their favourite sport. Cricket got $\frac{1}{4}$ of the votes, football got $\frac{5}{8}$ of the votes and swimming got $\frac{1}{12}$ of the votes. Use the number line below to show the fractions in order.



14. Rachel completed a race in $\frac{4}{6}$ of an hour, Karen in $\frac{1}{4}$ of an hour, and David in $\frac{1}{2}$ an hour. Order the runners from least to greatest amount of time taken to complete the race.

Chapter Review

Solve the problems below.

1. $\frac{3}{9} = \frac{9}{\square}$

2. Compare the fractions $\frac{3}{6}$ and $\frac{3}{9}$. Which fraction is larger?

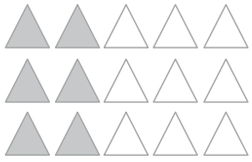
3. Express $\frac{11}{3}$ as a mixed number.

4. What fraction of the set below is white?

5. Write $\frac{12}{16}$ in its lowest equivalent form.

6. Write $2\frac{1}{6}$ as an improper fraction.

7. Complete the fraction to show the fraction of the set that is shaded.



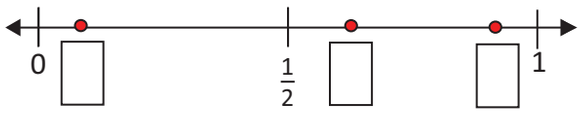
$\frac{\square}{5}$

8. A board is cut into 12 equal pieces. How many pieces together represent $\frac{3}{4}$ of the board? Explain how you arrived at your answer.

9. Amanda and Jacob made a banner. $\frac{2}{5}$ of the banner was blue, $\frac{1}{5}$ was red and the rest was white. What fraction of the banner was white?

10. Three boys ate a pizza. Jack ate $\frac{2}{4}$, Andrew ate $\frac{3}{8}$ and Mark ate $\frac{3}{24}$ of the pizza. Who ate most of the pizza?

11. Write each of the fractions $\frac{3}{5}$, $\frac{1}{12}$, and $\frac{9}{10}$ in the correct box on the number line below.



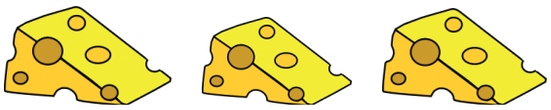
12. At Mount Hope Hospital 9 out of the 12 babies born on Christmas day were boys. In simplest form, what fraction of the babies born on Christmas day were girls?

13. Dylan needs to measure $\frac{1}{2}$ litre lemon juice to make lemonade. How many times should he fill his $\frac{1}{4}$ litre measuring cup?

14. Jayden ran $\frac{5}{8}$ of a kilometre and Keisha ran $\frac{3}{4}$ of a kilometre. Who ran farther?

15. Benjamin has enough money to buy less than $\frac{1}{2}$ kg of cheese. Which piece of cheese should Benjamin buy?

Cheese 1 **Cheese 2** **Cheese 3**



$\frac{3}{8}$ kg $\frac{3}{4}$ kg $\frac{4}{7}$ kg

16. Each day for 7 days, Mr. Charles used $\frac{1}{2}$ can of paint. Write the mixed number that represents how much paint Mr. Charles used after 7 days.

17. Mrs. Lee cut a pizza in half. She cut each half into 2 equal pieces and

then each piece into 3 equal slices. She served 8 slices. What fraction of the pizza did Mrs. Lee serve?

18. Deandre bought 12 fruits. Four of the fruits were apples and the rest were oranges. What fraction of the fruits were oranges?

19. A box has a total of 15 chocolate and vanilla cupcakes. There are 5 more chocolate cupcakes than vanilla cupcakes. What fraction of cupcakes are vanilla?

20. Mr. Johnson ran $\frac{3}{4}$ km on Monday, $\frac{5}{8}$ km on Tuesday and $\frac{1}{2}$ km on Wednesday. On which day did he run the shortest distance?

21. $\frac{2}{5}$ of Maria's beads are red. If Maria has 10 red beads, how many beads does Maria have altogether?

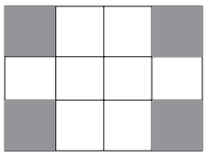
22. Kyle's mother made a pone and a cake. She cut the pone into 6 equal parts and the cake into 8 equal parts. His family ate $\frac{3}{4}$ of the cake. If his family ate more pone than cake, what fraction of the pone could have been eaten?

23. A class has 20 trays of poster paints. In each tray there are six colours. One of the colours is red. What fraction of the colours in the 20 trays is red?

24. A bag has 6 carrots, 2 cabbages and 8 tomatoes. What fraction of the vegetables are tomatoes?

25. Write a fraction with a denominator of 9. The fraction should be less than $\frac{1}{2}$.

26. Vinod wants to shade $\frac{2}{3}$ of the figure. He has shaded 4 squares. How many more squares must he shade?



27. Mother bought 12 fruits at the market. 4 of the fruits were apples and the rest were oranges. What fraction of the fruits were oranges?

28. A bouquet has 12 flowers. One sixth of them are roses and the rest are carnations. How many carnations are in the bouquet?

29. Javan ran 12 laps around the field to run a total of 1 kilometre on Sunday. How many laps will he need to run on Monday to run $\frac{4}{6}$ of a kilometre?

30. Lexi has 24 sweets. She gave $\frac{1}{2}$ of her sweets to Mia and $\frac{2}{3}$ of the remainder to her sister. How many sweets does she have left?

31. Mala has done $\frac{3}{4}$ of her Science homework, $\frac{6}{8}$ of her Mathematics homework, and $\frac{1}{2}$ of her Social Studies homework. Which subject is most complete? Which subject does she have the most left to do?

32. Miss Andrews cuts a cheese pizza and a vegetable pizza into a total of 25 equal slices. She cuts the vegetable pizza into 9 more pieces than the cheese pizza. Harry ate 4 slices of the vegetable pizza. What fraction of the vegetable pizza did he eat?