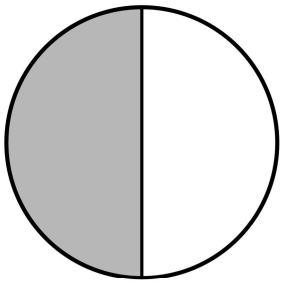
Name: _____ Date: _____

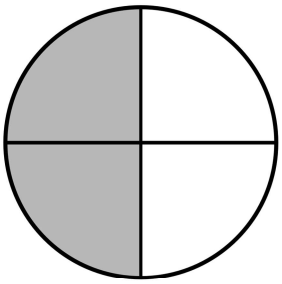
EQUIVALENT FRACTIONS
N-GEN MATH® 6

It is easy to forget that **fractions** represent quantities just as **whole numbers** do. The big difference is that with whole numbers there is typically only one way we represent them, yet with fractions there are many ways to represent the same quantity.

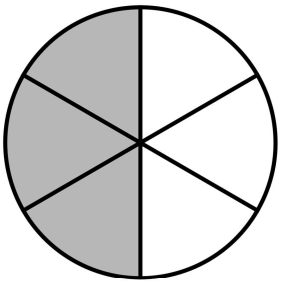
***Exercise* #1:** Consider the circles shown below. In each case, a certain amount of the circle has been shaded. For each, state the fraction of the circle that has been shaded.

(a) 

shaded fraction: _____

(b) 

shaded fraction: _____

(c) 

shaded fraction: _____

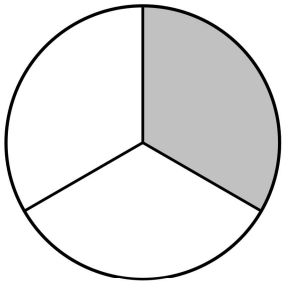
Since each fraction above represents the same amount they are called **equivalent fractions.**

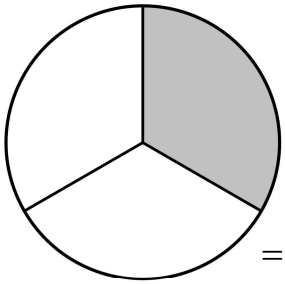
In general, we can say the following about fractions that represent the same value.

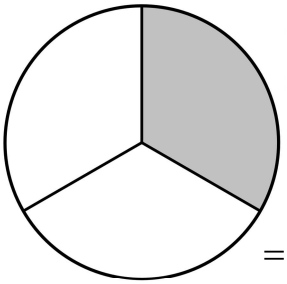
EQUIVALENT FRACTIONS

If $\frac{a}{b}$ is any fraction and c is any positive number, then $\frac{a \times c}{b \times c}$ represents an **equivalent fraction**.

***Exercise* #2:** One-third of a circle is shaded below in three separate pictures. Give two additional fractions that are equivalent to $\frac{1}{3}$ and illustrate with pictures.

 $= \frac{1}{3}$

 $=$ _____

 $=$ _____

***Exercise* #3:** Which of the following is *not* equivalent to the fraction $\frac{8}{5}$?

(1) $\frac{16}{10}$ (3) $\frac{40}{25}$

(2) $\frac{10}{7}$ (4) $1\frac{3}{5}$

We can use the idea of **equivalent fractions** to express a fraction in its **simplest** or **reduced** form.

***Exercise* #4:** Consider the fraction $\frac{12}{8}$ (don't worry that it's improper).

(a) What is the greatest common factor of 12 and 8?

(b) Divide both the numerator and denominator of the fraction $\frac{12}{8}$ by the gcf in (a).

(c) Why can we say that the fraction in (b) is equivalent to the fraction in (a)?

***Exercise* #5:** Write each of the following fractions in their most simplified form. Simplify in "stages" if you struggle finding the gcf of the two numbers.

(a) $\frac{12}{15}$ (b) $\frac{14}{4}$ (c) $\frac{25}{40}$ (d) $\frac{48}{18}$

(e) $\frac{7}{35}$ (f) $\frac{20}{70}$ (g) $\frac{88}{16}$ (h) $\frac{42}{60}$

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EQUIVALENT FRACTIONS
N-GEN MATH® 6 HOMEWORK

FLUENCY

1. In the three images below, one-half of the rectangle has been shaded. Modify the second and third pictures to show how this fraction is equivalent to $\frac{2}{4}$ and $\frac{3}{6}$.

$\frac{1}{2}$

$\frac{2}{4}$

$\frac{3}{6}$

2. Write five fractions that are equivalent to the unit fraction $\frac{1}{3}$. Show how you got each.

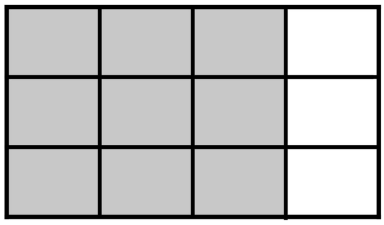
3. Which of the following fractions is *not* equivalent to $\frac{11}{3}$?

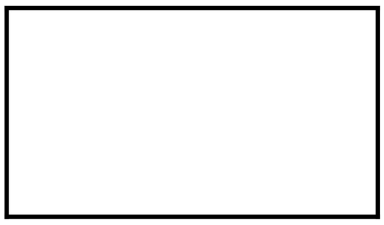
(1) $\frac{55}{15}$ (3) $3\frac{4}{6}$

(2) $3\frac{2}{3}$ (4) $\frac{44}{6}$

_____

4. In the rectangle below, $\frac{9}{12}$ of its area has been shaded. What fraction of its area is shaded in simplest form? Modify and shade the blank rectangle to represent this fraction.





simplest form = _____

5. Write each of the following fractions in simplest form. Show how you arrived at your answer. Simplify in stages if finding the gcf is difficult.

(a) $\frac{12}{18}$ (b) $\frac{36}{45}$ (c) $\frac{8}{32}$ (d) $\frac{55}{22}$

(e) $\frac{27}{12}$ (f) $\frac{5}{15}$ (g) $\frac{28}{49}$ (h) $\frac{48}{20}$

USING YOUR MATH

6. At Rylee's birthday party 6 of the 9 guests are 10 years old the others are 11. Rylee's mother says that two-thirds of the guests at Rylee's party are 10 years old. Is she correct? Use the diagram below to help justify your answer.

10	10	10	10	10	10	11	11	11

7. Isaiah is measuring $3\frac{1}{2}$ inches using a ruler marked in $\frac{1}{8}$ inch increments. Which of the following below is the total number of eighths that Isaiah will need to count out to make his measurement? Hint: turn $3\frac{1}{2}$ into an improper fraction with a denominator of 8.

(1) 24 (3) 30

(2) 28 (4) 36

REVIEWING YOUR MATH

8. Chloe must water her garden using a container that holds only one-quarter of a gallon. If she uses 27 full containers to water her garden, so $\frac{27}{4}$ gallons, then between what two whole number of gallons has she used? Justify.