Date:_____

Chapter 14, Lesson B: Find Equivalent Fractions

Compare and Order Fractions (14.B.1)

- A **fraction** is a **part of a whole**.
  It consists of a **numerator** and a **denominator**.

$$\frac{3}{5} \quad \begin{matrix} \longleftarrow \text{numerator} \\ \longleftarrow \text{denominator} \end{matrix}$$

A) Equivalent Fractions:

- **Equivalent fractions** represent the **same part of the whole**.
  They have **different** numerators and denominators but they are **equal in value**.

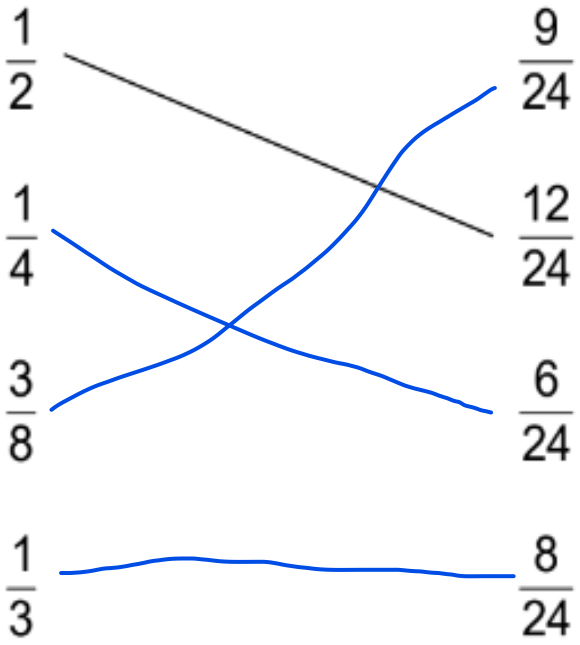
$$\frac{2}{4} = \frac{4}{8} = \frac{9}{18} = \frac{6}{12} = \frac{7}{14}$$

- We can find equivalent fractions by **multiplying/dividing** the numerator and the denominator of a fraction **by the same number**.

$$\frac{1 \times 3}{3 \times 3} = \frac{3}{9} \qquad \frac{2 \times 2}{5 \times 2} = \frac{4}{10} \qquad \frac{7 \times 4}{11 \times 4} = \frac{28}{44}$$

$$\frac{10 \div 10}{30 \div 10} = \frac{1}{3} \qquad \frac{9 \div 3}{24 \div 3} = \frac{3}{8} \qquad \frac{2 \div 2}{8 \div 2} = \frac{1}{4}$$

Q1. Draw lines to match the equivalent fractions.
One has been done for you.



Q2. Write the correct number in the box.

$\frac{1}{5} \overset{\times 4}{=} \frac{4}{20}$ $\frac{2}{9} \overset{\times 2}{=} \frac{4}{18}$ $\frac{6}{30} \overset{\div 6}{=} \frac{1}{5}$

B) Fractions with the Same Denominators

- When comparing fractions with the **same denominators**, it is easy to determine the greater or the smaller fraction as we can simply look for the fraction with the greater numerator.
- **The greater fraction** is the one with the **greater numerator**.

$\frac{5}{9} > \frac{2}{9}$ 5 is greater than 2

same denominators

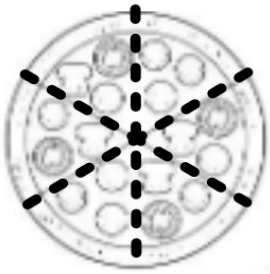
Q3. Compare the fractions using < , > , =.

$\frac{4}{6} > \frac{2}{6}$ $\frac{3}{5} < \frac{4}{5}$ $\frac{7}{10} < \frac{9}{10}$

C)Fractions with the Same Numerator

When the **numerators** are the **same**, the **greater fraction** is the one with the **smaller denominator**.

$\frac{1}{3}$



$\frac{1}{6}$ same numerators different denominators

When comparing fractions with different denominators, we need to find the least common multiple of the denominators.

We multiply the numerator and denominator of the fraction by the same number to make sure that the new fraction has the same value of the original one.

- The denominators are the same now, we can compare fractions easily.

Example: **30** is the least common multiple of 5 and 6.

$\frac{4 \times 6}{5 \times 6}$ $\frac{3 \times 5}{6 \times 5}$

$\frac{24}{30} > \frac{15}{30}$

Q4. Compare the fractions using (< , > , =).

$\frac{3 \times 5}{3 \times 7} > \frac{2 \times 7}{3 \times 7}$ $\quad \frac{15}{21} \quad \frac{14}{21}$

$\frac{8 \times 3}{8 \times 6} < \frac{5 \times 6}{8 \times 6}$ $\quad \frac{24}{48} \quad \frac{30}{48}$

$\frac{9 \times 1}{9 \times 2} < \frac{7 \times 2}{9 \times 2}$ $\quad \frac{9}{18} \quad \frac{14}{18}$

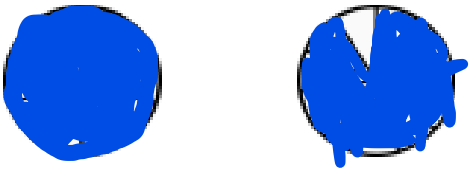
Q5. Shade each shape and compare the fractions using < , > or =.

$\frac{1}{5} > \frac{1}{12}$

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

$\frac{2}{6} \quad \frac{4}{6}$

$\frac{9}{12} < \frac{12}{12} = 1$



$1 = \frac{10}{10} > \frac{10}{11}$

Q6. Use the mathematical symbols < , > , = to compare the fractions.

$1 = \frac{3}{3} > \frac{3}{6}$

$\frac{1}{11} < \frac{6}{11}$

$1 = \frac{7}{7} = \frac{8}{8} = 1$

$\frac{11}{22} < \frac{16}{22}$

$\frac{5}{6} < \frac{8}{8} = 1$

$\frac{11 \times 1}{11 \times 2} < \frac{8 \times 2}{11 \times 2}$

Q7. Put these fractions in order starting with the smallest.

$\frac{1}{4}$ $\frac{1}{5}$ $\frac{1}{10}$ $\frac{1}{2}$

$\frac{1}{10}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{2}$

smallest

Explain why you arranged the fraction in this order.

The fraction with the smallest denominator is the greatest fraction.

Q8. Order the fractions below from greatest to smallest.

Make the denominators the same number, then order.

a) $\frac{1}{4}$ $\frac{2}{4}$ $\frac{6 \div 2}{8 \div 2} = \frac{3}{4}$

$\frac{3}{4}$, $\frac{2}{4}$, $\frac{1}{4}$

greatest

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

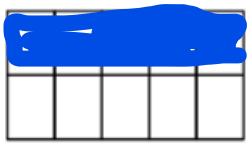
$\frac{5}{6}$, $\frac{4}{6}$, $\frac{2}{6}$, $\frac{1}{6}$

greatest

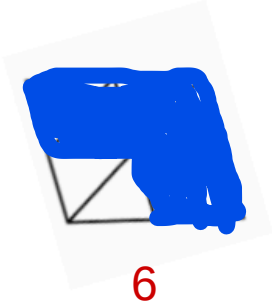
Q9. Draw a ring around the fractions that are equivalent to $\frac{3}{5}$.

$\frac{6}{10}$ $\frac{14}{20}$ $\frac{15}{25}$ $\frac{20}{30}$ $\frac{21}{35}$

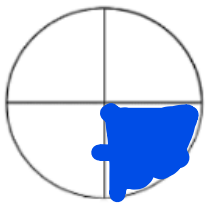
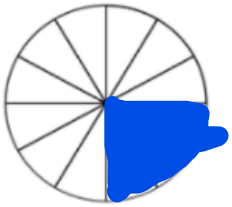
Q10. Shade the figures and write the numerator to show the equivalent fractions.

a)  

$\frac{1}{2} = \frac{5}{10}$

b)  

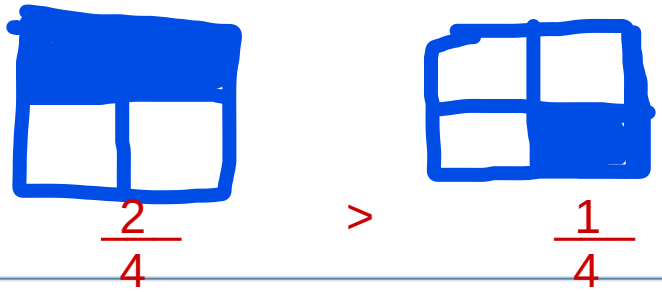
$\frac{3}{4} = \frac{6}{8}$

c)  

$\frac{1}{4} = \frac{3}{12}$

Q11. "If two fractions have the same denominator, the greater the numerator, the greater the fraction."

Draw diagrams to show that this statement is true.



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

Q12. Cami and Astrid have some beads.

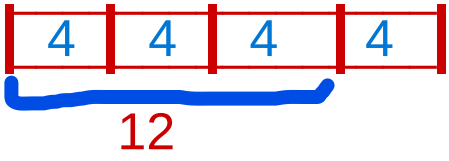
$\frac{3}{4}$ of the beads that each one has are red, while the rest are blue.

Cami has 12 red beads while Astrid has 15 red beads.

How many beads does each of them have?

$12 \div 3 = 4$

Cami: $\frac{3}{4}$ of ? = 12



$4 \times 4 = 16$ beads

$15 \div 3 = 5$

Astrid: $\frac{3}{4}$ of ? = 15

$4 \times 5 = 20$ beads

Cami: 16

Astrid: 20

Q13. Gavin folded a piece of paper into two equal parts.

He shaded $\frac{1}{2}$ of the paper as shown below.

new denominator

He then folded the same piece of paper into 16 equal parts.

How many parts are shaded now?

$\frac{1 \times 8}{2 \times 8} = \frac{?}{16}$ $\quad \frac{1}{2} = \frac{8}{16}$

8 parts

Q14. Fill in the blanks with < or >.

$\frac{1}{10}$	<	$\frac{3}{10}$
$\frac{2}{5}$	<	$\frac{4}{5}$
$\frac{1}{4}$	>	$\frac{1}{10}$
$\frac{1}{5}$	<	$\frac{1}{3}$

Q15. There are some toys.

$\frac{5}{10}$ of them belong to Carl.

$\frac{2}{10}$ of them belong to Eason.

$\frac{3}{10}$ of them belong to Shirley.

- Fill in the blanks using the information above.

_____Shirly_____ has more toys than _____Eason_____, but fewer toys than _____Carl_____ .