Math 3 Classwork 23

Warm Up

1 Multiplication and Division Quiz. Do as many problems as you can in **5 minutes.**

55 × 2 =	300 × 15 =	600 × 15 =
35 × 5 =	45 × 30 =	45 × 4 =
65 × 9 =	60 × 25 =	65 × 40 =
85 × 10 =	8 × 15 =	8 × 55 =
2 × 75 =	20 × 75 =	2 × 65 =
110 ÷ 2 =	240 ÷ 4 =	250 ÷ 5 =
160 ÷ 80 =	150 ÷ 25 =	320 ÷ 160 =
360 ÷ 60 =	325 ÷ 25 =	600 ÷30 =

Homework Review

2 Use +, – , ÷ and × with parenthesis to make number sentences that give the target number:

a) 2, 5, 6 Target 40 _____

b) 3, 5, 6 Target 21 _____

c) 4, 6, 10 Target 1 _____

3 If there are 60 minutes in one hour, what part of the hour will be (simplify your fractions):

a) 30 min ____

b) 15 min ____

c) 20 min ____

d) 40 min ____

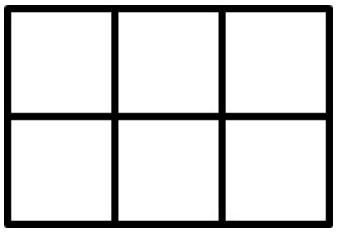
e) 12 min ____

f) 24 min ____

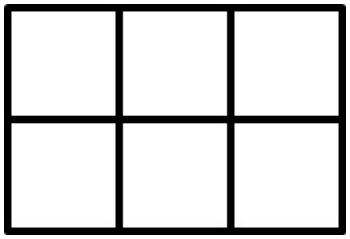
REVIEW I

4

a) Shade $\frac{1}{2}$ of the area of rectangle.



b) Shade $\frac{2}{3}$ of the area of the rectangle.



5

a) Locate 1 on the number line. Label the point. Use a ruler or a compass. Be as exact as possible.

b) Locate 1 on the number line. Label the point. Use a ruler or a compass. Be as exact as possible.

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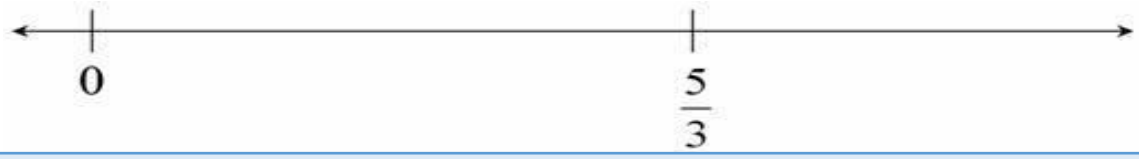


Year, month, day, hour and minute as whole units of time

1year = 12 months = 365 days
1 day = 24 hours = 1,440 minutes
1 hour = 60 minutes = 3,600 seconds

6

Show result as a fraction:

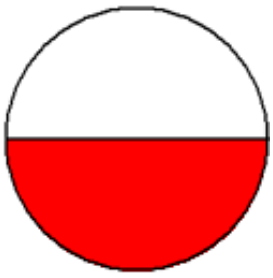
a) What part of the hour is 30 minutes? ___
b) 15 minutes? ____
c) 10 minutes? _____
d) 45 minutes? _____

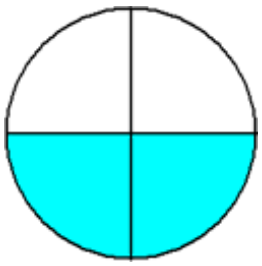
7 Convert fractions to minutes:

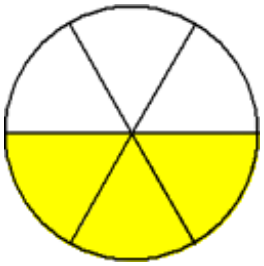
a) $\frac{1}{3}$ of the hour is _____ minutes *b*) $\frac{2}{3}$ of the hour is _____ minutes

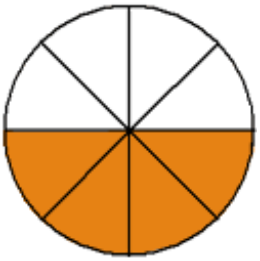
New Material I

Example: What do the fractions below have in common?

$\frac{1}{2}$ 

 $\frac{2}{4}$

$\frac{3}{6}$ 

 $\frac{4}{8}$

Equivalent fractions

Equivalent fractions are different fractions that name the same number.

The fractions $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}$ and $\frac{4}{8}$ are equivalent since each represents the same number.

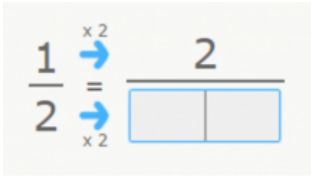
8 Some fractions may look different, but they are really the same, for example:

$^4/_8$ (Four-Eighths) $= {}^2/_4$ (Two-Quarters) $= {}^1/_2$ (One-Half)

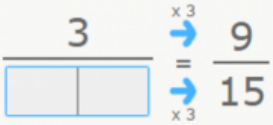
9

How to obtain equivalent fractions:

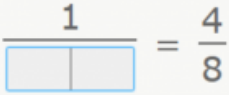
a) In this case, we are going to obtain an equivalent fraction by multiplying the numerator and denominator by the same number. We multiply 2 x 2 and obtain 4 (our denominator). Find the denominator.



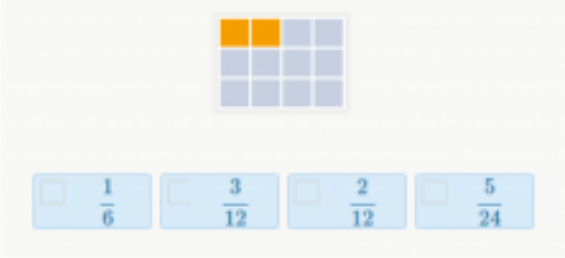
b) In this case, we multiply numerator and denominator by 3. We multiply 3 × 3 to get 9. What number should we multiply by 5 to get 15? Find the denominator.



c) Find the denominator that makes these fractions equivalent.

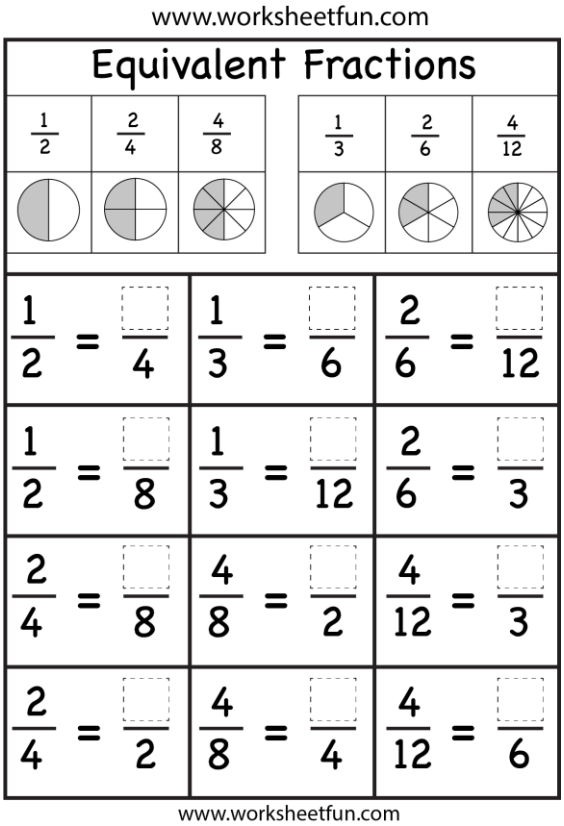


d) In this exercise, you should choose the fractions out of given options, that are equivalent to the graphical representation.



10

Complete to make equivalent fractions



It is usually best to show an answer using the simplest fraction ($^1/_2$ in this case). That is called ***Simplifying***, or ***Reducing*** the Fraction

How to Reduce a Fraction to Its Lowest Terms

Even if fractions look different, they can actually represent the same amount; in other words, one of the fractions will have reduced terms compared to the other. You may need to reduce the terms of fractions to work with them in an equation.

Reducing fractions to their lowest terms involves division.

Method 1: Reduce fractions the formal way:

1. Break down both the numerator (top number) and denominator (bottom number) into their prime factors ("Factors" are the numbers you multiply together to get another number)

For example, you want to reduce the fraction $\frac{12}{30}$: $\frac{12}{30} = \frac{2 \cdot 2 \cdot 3}{2 \cdot 3 \cdot 5}$

2. Cross out any common factors.

In this example, you cross out a 2 and a 3, because they're common factors — that is, they appear in both the numerator and denominator: $\frac{12}{30} = \frac{\cancel{2} \cdot 2 \cdot \cancel{3}}{\cancel{2} \cdot \cancel{3} \cdot 5}$

3. Multiply the remaining numbers to get the reduced numerator and denominator.

This shows you that the fraction $\frac{12}{30}$ reduces to $\frac{2}{5}$: $\frac{12}{30} = \frac{\cancel{2} \cdot 2 \cdot \cancel{3}}{\cancel{2} \cdot \cancel{3} \cdot 5} = \frac{2}{5}$

Method 2: Reduce fractions the informal way:

Here's an easier way to reduce fractions after you get comfortable with the concept:

1. If the numerator (top number) and denominator (bottom number) are both divisible by 2 — that is, if they're both even — divide both by

For example, suppose you want to reduce the fraction $\frac{24}{60}$. The numerator and the denominator are both even, so divide them both by 2: $\frac{24}{60} = \frac{12}{30}$

2. Repeat Step 1 until the numerator or denominator (or both) is no longer divisible by 2. In the resulting fraction, both numbers are still even, so repeat the first step again: $\frac{12}{30} = \frac{6}{15}$

3. Repeat Step 1 using the number 3, and then 5, and then 7, continuing testing prime numbers until you're sure that the numerator and denominator have no common factors. In our example, the numerator and the denominator are both divisible by 3, so divide both by 3: $\frac{6}{15} = \frac{2}{5}$

Neither the numerator nor the denominator is further divisible by 3, so this step is complete. At this point, you can move on to test for divisibility by 5, 7, and so on, but you really don't need to. The numerator is 2, and it obviously isn't divisible by any larger number, so you know that the fraction 24/60 reduces to 2/5.

11 Reduce fractions:

a) $\frac{8}{30}$ = b) $\frac{15}{45}$ = c) $\frac{16}{24}$ =

REVIEW II

12 Do you need a more detailed review of basic objects of geometry?

YES NO

Using a ruler draw:

a) $\overline{AB}$

b) $\overleftrightarrow{AB}$

c) $\overrightarrow{AB}$

d) l

13 Using a ruler, draw:

a) Two line segments, which intersect at point K

b) Two line segments, which do NOT intersect and are NOT parallel

c) Two line segments, which a parallel

14 Using a ruler or set-squares, draw:

a) $\angle AOB - acute$

b) $\angle CED - obtuse$

c) $\angle FOP - right$

15 Using a ruler or set-squares, draw:

a) $\angle ABC - straight\ angle$

b) two *adjacent angles*, name them correctly

c) two supplementary angles, name them correctly

d) two complementary angles, name them correctly