Grade 6 Warm Up

Feb. __, 2019

+ −
÷ × RATIOS
5¢ per piece   10 $/ pound

1) Determine if the following ratios are equivalent

a) 14:21 $\overset{\times 2}{7:5}$ $\overset{\times 2}{}$
   14 : 10
   No

b) 7:15   14:32
   $\times 2$ ⟋ $\overset{\times 2}{}$
   14 : 30
   No

2) Find the missing value for the equivalent ratios   **U = 11**

a) 8 : 42 = 4 : K
   ×2
   K=21
   ÷2

b) U : 9 = 33 : 27
   ÷3
   ÷3

3) Jim has a 6L of tea, 13 lemons and 2 cups of sugar to make ice-tea. If Jim has 39 lemons then how much tea and sugar is required to make a multiple batch of ice-tea?

T : L : S
×3 ⟋ 6 : 13 : 2
   ×3
   18 : 39 : 6   ×3

18L of tea and 6 cups of sugar is needed.

Extra practice 5 solutions

Lesson 5: Equivalent Ratios

1. Write 2 equivalent ratios for each ratio.

a) 2 : 2
4 : 4
1 : 1

b) 4 : 7
8 : 14
12 : 21

c) 6 : 8
3 : 4
12 : 16

d) 1 : 6
2 : 12
3 : 18

e) 5 : 2
10 : 4
15 : 6

f) 6 : 2
12 : 4
3 : 1

g) 9 : 3
3 : 1
18 : 6

h) 4 : 5
8 : 10
12 : 15

i) 8 : 3
16 : 6
24 : 9

j) 9 : 12
3 : 4
18 : 24

k) 3 : 4
6 : 8
9 : 12

l) 1 : 8
2 : 16
3 : 24

2. Write an equivalent ratio with 50 as one of the terms.

a) 5 : 10
50 : 100
OR
5 : 10
25 : 50

b) 7 : 25
14 : 50

c) 9 : 5
90 : 50

d) 10 : 6
50 : 30

e) 2 : 6
50 : 150

f) 10 : 7
50 : 35

g) 25 : 4
50 : 8

h) 1 : 6
50 : 300

3. List all the ratios that are equivalent to 4 : 3 and have a first term that is less than 50.

4 : 3
8 : 6
12 : 9
16 : 12
20 : 15
24 : 18
28 : 21

32 : 24
36 : 27
40 : 30
44 : 33
48 : 36

4. Donald's punch recipe calls for 3 L of ginger ale, 1 L of strawberry juice, and 2 L of orange juice.
Suppose Donald uses 9 L of ginger ale.
How much strawberry juice and orange juice should he use?

G : S : Or
3 : 1 : 2
9 : 3 : 6

He should use 3L of Strawberry and 6L of orange Juice

$2:4 \Rightarrow 6$ letters

5. The word "can" has a vowel to consonant ratio of 1 to 2.

v : c

a) Find 3 words, each with more than 3 letters, with a vowel to consonant ratio equivalent to 1 to 2.

b) Choose a vowel to consonant ratio. Find 3 words with that ratio.

Vowels
↑ ↑
2 : 4

Street
2 : 4

6. The ratio of fish to snails in Jake's fish tank was 8 to 2. Jake added more fish and snails to the tank, but kept the same ratio. How many fish and snails might there be in the tank now?

12:3 ×3

16:4

20:5

F : S
8 : 2
4 : 1

×y

×s

→ needs
to get
bigger

16:4

24 : 6

7. Write an equivalent ratio with 30 as one of the terms.

a) 2 : 15   b) 5 : 8 ×6   c) 4 : 10 ×3   d) 3 : 8 ×10   e) 12 : 6 ×5
              30 : 48   12 : 30   30 : 80   60 : 30

2 : 15
×2   ×2 or
4 : 30

×15 (2 : 15) ×15
    30 : 225

Answers to worksheet

Equivalent Ratio — Sheet 1

A) Check for equivalency.

1) Are 2 : 3 and 10 : 15 equivalent?   ✓ Yes   ○ No
   x5 x5
   10:15

2) Are 8 : 12 and 4 : 5 equivalent?   ○ Yes   ✓ No
   ÷2   ÷2
   4:6

3) Are 21 : 6 and 7 : 2 equivalent?   ✓ Yes   ○ No
   ÷3 ÷3
   7:2

4) Are 6 : 9 and 24 : 32 equivalent?   ○ Yes   ✓ No
   x4 x4
   24:36

B) Find the unknown value in each problem.

1) $5 : 6 = 15 : m$ (×3)

   $m = \underline{18}$

2) $k : 5 = 7 : 1$ (×5)

   $k = \underline{35}$

3) $6 : 16 = 3 : p$ (÷2)

   $p = \underline{8}$

4) $36 : 63 = s : 7$ (÷9)

   $s = \underline{4}$

5) $9 : y = 27 : 15$ (÷3)

   $y = \underline{5}$

6) $u : 3 = 2 : 6$ (÷2)

   $u = \underline{1}$

C) An urn has four different color balls. The ratio of blue balls to red balls is 3:7 and the ratio of green balls to yellow balls is 9:21. Are the ratios of blue balls to red balls and green balls to yellow balls equivalent?

green : yellow
9:21
÷3 ÷3
3:7

blue : red
3 : 7

_____ **Equivalent** _____

Practice

1. Write 2 equivalent ratios for each ratio.

a) 3:1 b) 4:2 c) 1:2 d) 5:6 e) 3:5
f) 4:9 g) 7:8 h) 8:3 i) 1:1 j) 2:5

a) 3:1 $\times 2$
$\times 3$ 6:2 $\times 2$
9:3

b) 4:2 $\div 2$
2:1
$\times 3$ 6:3

c) 1:2
$\times 2$ 2:4 $\times 3$
3:6

d) 5:6 $\times 2$
$\times 2$ 10:12 $\times 3$
15:18

e) 3:5
6:10 $\times 2$ $\times 3$
9:15

f) 4:9
8:18 $\times 2$ $\times 3$
12:27

g) 7:8 $\times 2$
14:16 $\times 3$
21:24

h) 8:3 $\times 2$
$\times 2$ 16:6
24:9

i) 1:1
2:2
3:3

j) 2:5 $\times 2$ $\times 3$
$\times 2$ 4:10
$\times 3$ 6:15

2. Write an equivalent ratio with 20 as one of the terms.

a) 4:5 $\times 4$: $\times 4$
16:20

b) 2:8 $\times 10$: $\times 10$
20:80

c) 7:4 $\times 5$: $\times 5$
35:20

d) 10:3 $\times 2$: $\times 2$
20:6

3. Are the ratios in each pair equivalent? Explain how you know.

a) 7 to 14 and 1 to 2
$\div 7$ $\div 7$
1:2 Yes

b) 6:9 and 3:2
$\times 2$ $\times 2$
6:4
No

c) 1 to 10 and 4 to 40
$\times 4$ $\times 4$
4 to 40 Yes

4. The table shows the number of beads used to make a necklace.
Ginger wants to make a smaller necklace using the same ratio of pink to white beads.
How many different necklaces could Ginger make?
How do you know?

Colour	Number
Pink	30
White	35

30+35
=65
beads

Pink : White
30 : 35 $\div 5$
6 : 7
12 : 14
18 : 21
24 : 28

5. In a card game, each player is dealt 5 cards.
Make a table to show the total number of cards dealt for each number of players from 3 to 6.
Write each ratio of players to cards dealt.

Number of Players	Total Number of Cards Dealt

6. Ms. Olivieri's class plays a game in teams.
   Each team has the same number of students.
   The ratio of teams to players is 8 : 32.
   a) How many students are in Ms. Olivieri's class? **32**
   b) How many students are on each team?

Team : Players *(Total)*
8 : 32

$32 \div 8 = 4$ students

7. Atiba plays for the Linden Woods Vipers in the
   Winnipeg Youth Soccer League.
   The ratio of players to soccer balls at practice
   sessions is 5 : 2.
   How many soccer balls are needed for 20 players?

Players : Soccer balls
$\times 4 \Big(\begin{matrix} 5 : 2 \\ 20 : \underline{8} \end{matrix} \Big) \times 4$

Need 8 soccer balls for 20 players

8. The word "fun" has a vowel-to-consonant ratio of 1 : 2.
   a) Find 3 words with a vowel-to-consonant ratio of 2 : 3.
   b) Choose a vowel-to-consonant ratio and find 3 words for it.

Many answers   2 : 3
              v : c

a) b a k e r
     ↑   ↑
     v   v

a)
a) beans

9. Su Mei's recipe for bean salad calls for 3 cans of lima beans,
   2 cans of pinto beans, and 1 can of kidney beans.
   Su Mei is making bean salad for her family reunion.
   Suppose she uses 9 cans of lima beans.
   a) How many cans of pinto beans will she use? **6**
   b) How many cans of kidney beans will she use? **3**

lima : pinto : kidney
$\Big(\begin{matrix} 3 : 2 : 1 \\ {\scriptstyle \times 3} \quad {\scriptstyle \times 3} \quad {\scriptstyle \times 3} \\ 9 : \underline{6} : \underline{3} \end{matrix} \Big)$

10. Katherine has diabetes.
    At each meal, she must estimate the mass in grams
    of carbohydrates she plans to eat, then inject
    the appropriate amount of insulin.
    Katherine needs 1 unit of insulin for
    15 g of carbohydrates.
    Katherine's lunch has 60 g of carbohydrates.
    How many units of insulin should Katherine inject? **4**

Insulin : Carbs
$\times 4 \Big(\begin{matrix} 1 : 15g \\ \underline{} : 60g \end{matrix} \Big) \times 4$
↓
needs 4 units

11. To make a jug of plant fertilizer, Malaika uses
    6 cups of water and 3 scoops of fertilizer.
    Bart uses 8 cups of water and 5 scoops of fertilizer.
    Will Malaika's and Bart's plant fertilizer have the same strength?
    Explain.

Bart
                    scoop
cups water : Fertilizer
$\times 3 \Big(\begin{matrix} 8 : 5 \\ 24 : 15 \end{matrix} \Big) \times 3$

Take to same water or fer.

Mal
cups   scoops
Water : Fertilizer
6 : 3
$\Big) \times 5$
30 : 15
↑
uses more water
so weaker

12. Use counters to find all the ratios that are equivalent to 2 : 3
    and have a second term that is less than 40. List the ratios.

Students took a survey to determine which hike they would like to take at the end of the year. Each student could only choose one place. The chart below are the results/

Hike	Number of Students
Camel's End Coulee Hike	21
Centrosaurus Bone Bed Hike	24
Great Badlands Hike	33
Fossil Safari Hike	22

a) How many students are in the group? (Show work on how you know)

b) What fraction of students chose each hike?

c) What fraction of students did not choose the great Badlands hike? Show work on how you found out.

Connect ·

The hundredths grid represents 1 whole.

45

10

10
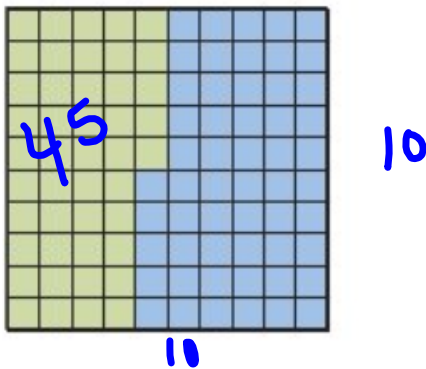
Here are 4 ways to describe the green part of the grid.

➤ Compare the number of green squares to the total number of squares:
45 out of 100 squares are green

➤ Write a fraction.
$\frac{45}{100}$ of the grid is green.

0.4 5

Fraction to Decimal

If the denominator is 100 then the numerator is the decimal part BUT stopping in the hundredths position

%

➤ Write a decimal.
0.45 of the grid is green.

➤ Write a **percent**.
45% of the grid is green.
Percent is another name for *hundredths*.

% is the percent symbol.

Percent

Percent is a special ratio, where the second term is always 100.

Ex) 80% is often referred to as 80 out of 100.

You can easily write a percent as a fraction, decimal or number.

MUST STUDY THE FOLLOWING

Percent to Fraction --> Put the percent over 100 and reduce

Ex) 80% as a fraction is $\dfrac{80 \div 10}{100 \div 10} = \dfrac{8 \div 2}{10 \div 2} = \dfrac{4}{5}$

To take a percent to a decimal you divide by 100

move decimals two places to the left

Ex) 80% as a decimal

80.

Original decimal is at the end so move it

= 0.80

You try

Write the following as a percent

a) 32 out of 100

$$\frac{32}{100} \rightarrow 32\%$$

Fraction   percent

b) 27 out of 100

$$\frac{27}{100} = 27\%$$

Fraction   percent

Write the following percents as a fraction with hundredths. Then as a decimal
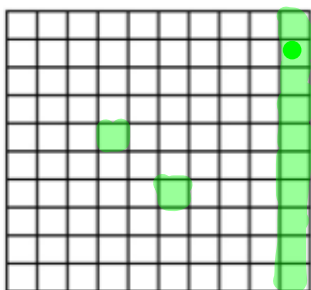
a) 17%

$$\frac{17}{100}$$

$$= 0.17$$

b) 15%

$$\frac{15}{100}$$

$$0.15$$

You try

Write a fraction with hundreds, a decimal and a percent, to mname
the shaded part of the grid.

$$\frac{12}{100} \div 2 = \frac{6}{50} \div 2 = \frac{3}{25} \quad 12\% \qquad 0.12$$

Reduce

Class/Homework

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#1a,

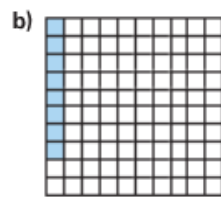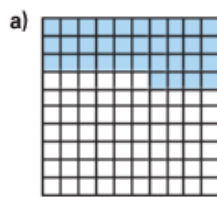#4a (Don't estimate just count)

#5a c

#8ab

Hundreds grids

#9ab

#10

#13

Practice

1. Write:
   • a fraction with hundredths   • a decimal   • a percent
   to name the shaded part of each grid.

   a)

   b)

   c)
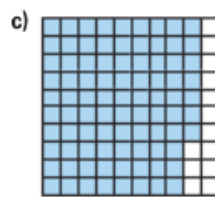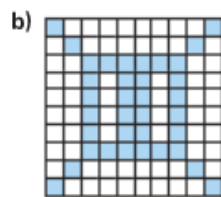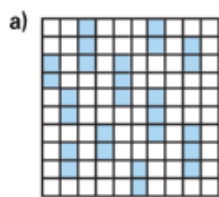
2. Write:
   • a fraction with hundredths • a decimal • a percent
   to name the unshaded part of each grid in question 1.

3. For each grid in question 1, add the percents you used to name the shaded and unshaded parts.
   What do you notice? Why do you think this happens?

4. Estimate the percent of each grid that is shaded.
   Then count the squares to check.

   a)

   b)

   c)
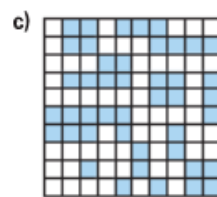
5. Use Base Ten Blocks to show each percent.
   Then write each percent as a decimal.
   a) 84%   b) 17%   c) 25%   d) 100%

6. a) Use a hundredths grid. Colour 20% red, 13% blue, 32% green, and 23% yellow.
   b) Write a fraction to describe the part of the grid that is each colour.
   c) Write a decimal and a percent to describe the part of the grid that is not coloured.

7. **a)** Use a hundredths grid. Choose a different colour for each hike in *Explore*.
   Colour a section of the grid to show the fraction of students who chose that hike.
   b) Write a percent to describe each section of the grid in part a.

8. Write as a percent. Then write as a decimal.

a) 64 out of 100   b) $\frac{50}{100}$ c) 1 out of 100   d) $\frac{17}{100}$

9. Write each percent as a fraction with hundredths. Then write as a decimal.
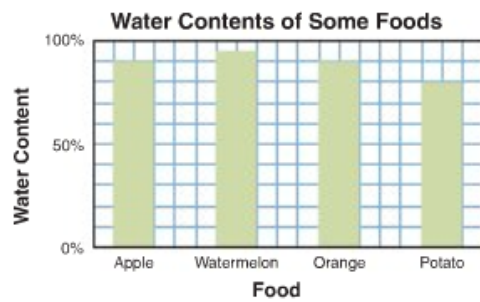   a) 13%   b) 5%   c) 79%   d) 64%

10. Ninety-seven percent of Earth's water is salt water.
    What percent is fresh water?
    How do you know?

11. The graph shows the water contents of some foods.

Water Contents of Some Foods

a) About what percent of each food is water?
b) About what percent of each food is not water?
c) Write each percent in the graph as a fraction.

12. Janette bought a portable CD player on sale.
    The regular price was $100. She was charged $89.
    a) What percent of the regular price did Janette pay?
    b) What percent of the regular price did she receive
       as a discount?

13. Salvo said that of the 100 singers in a children's choir in Whitehorse, 62% are girls and 48% are boys.
    Is this possible?
    Use words and pictures to explain.

Attachments

Hundreds chart.jpg