RATIOS AND FRACTIONS

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

A fraction compares a part with the whole.



2 out of 5 equal parts are shaded: $\frac{2}{5}$

The total number of parts is the denominator (the bottom number).

1 What fraction of each bar is shaded?

a)  $\frac{\square}{\square}$

b)  $\frac{\square}{\square}$

c)  $\frac{\square}{\square}$

2 Here are some squares and circles.



a) How many shapes altogether? ☐

b) Fraction that are squares: $\frac{\square}{\square}$

c) Fraction that are circles: $\frac{\square}{\square}$

3 Shade each bar.

a) Shade $\frac{3}{8}$ of the bar.



The fraction that is not shaded is $\frac{\square}{\square}$

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



The fraction that is not shaded is $\frac{\square}{\square}$

4 Fill in the missing fraction to make 1 whole.



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



$\frac{3}{10} + \frac{\square}{\square} = 1$



$\frac{5}{9} + \frac{\square}{\square} = 1$

RATIOS AND FRACTIONS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Navy : white = 2 : 3. There are 2 + 3 = 5 parts in total.



Navy is $\frac{2}{5}$ of the bar. White is $\frac{3}{5}$ of the bar.

The ratio compares part with part. The fraction compares part with whole.

1 Write the ratio and the fraction for each bar.

a)  navy : white = ☐ : ☐ Fraction navy: $\frac{\square}{\square}$

b)  navy : white = ☐ : ☐ Fraction white: $\frac{\square}{\square}$

2 Complete each sentence.

a) Ratio 3 : 4. Total parts = ☐ The first part is $\frac{\square}{\square}$ of the whole.

b) Ratio 5 : 1. Total parts = ☐ The second part is $\frac{\square}{\square}$ of the whole.

c) Ratio 2 : 9. Total parts = ☐ The first part is $\frac{\square}{\square}$ of the whole.

3 2/7 of a drink is cordial. The rest is water. Shade the cordial on the bar.



a) Fraction that is water: $\frac{\square}{\square}$

b) cordial : water = ☐ : ☐

4 In this group of shapes, the ratio of squares to circles is 1 : 2.



Amy says, "In the ratio 1 : 2, $\frac{1}{2}$ of the shapes are squares."

Amy is wrong. Explain why.

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RATIOS AND FRACTIONS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

A ratio compares part with part; a fraction compares part with the whole. In the ratio 2 : 7 there are 9 parts in total, so the first part is 2/9 of the whole and the second part is 7/9. A single bar model shows both.

FLUENCY

1 Write each part of the ratio as a fraction of the whole.

a) 5 : 3 → $\frac{\square}{\square}$ and $\frac{\square}{\square}$

b) 4 : 11 → $\frac{\square}{\square}$ and $\frac{\square}{\square}$

c) 2 : 3 : 5 → $\frac{\square}{\square}$, $\frac{\square}{\square}$ and $\frac{\square}{\square}$

2 Write each ratio.

a) $\frac{3}{10}$ of a class are boys. boys : girls = ☐ : ☐

b) $\frac{5}{12}$ of some shapes are squares; the rest are circles. squares : circles = ☐ : ☐

c) $\frac{1}{4}$ are red, $\frac{1}{2}$ are blue, the rest are green. red : blue : green = ☐ : ☐ : ☐

REASONING

3 In bag A, the ratio of red to blue counters is 3 : 7. In bag B, 2/5 of the counters are red.

Which bag has the greater fraction of red counters? ☐

Show how you know. .....

4 Explain why, in the ratio 3 : 4, the first part is 3/7 of the whole and not 3/4.

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RATIOS AND FRACTIONS

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) If a : b = 1 : 1, each part is half of the whole. ALWAYS SOMETIMES NEVER

b) In a : b, the first part is a/b of the whole. ALWAYS SOMETIMES NEVER

c) If x/y are boys, boys : girls is x : (y – x). ALWAYS SOMETIMES NEVER

d) In a : b, the first part is less than half. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 A box has 48 red, white and blue beads. 1/3 of the beads are red. The ratio of white to blue is 3 : 5.

a) red : white : blue in its simplest form = ☐ : ☐ : ☐

b) How many blue beads are there? ☐

3 In a choir, boys : girls = 2 : 3. Then 4 more boys join. Now 1/2 of the choir are boys.

a) How many girls are in the choir? ☐ **b)** How many boys now? ☐

★ CHALLENGE FOR ALL

4 In a fruit bowl, apples : pears = 3 : 2 and pears : bananas = 4 : 5.

a) apples : pears : bananas = ☐ : ☐ : ☐

b) What fraction of the fruit is pears? $\frac{\square}{\square}$

c) There are 3 more apples than bananas. How many pieces of fruit are there? ☐

STEP 7 ANSWERS – RATIOS AND FRACTIONS

ANSWERS

BUILDING BLOCKS

1. a) 1/4 · b) 5/6 · c) 3/8
2. a) 7 shapes · b) 3/7 · c) 4/7
3. a) 3 of 8 parts shaded; 5/8 not shaded · b) 2 of 3 parts shaded; 1/3 not shaded
4. 3/5 · 7/10 · 4/9

SUPPORT

1. a) 1 : 3, navy 1/4 · b) 4 : 1, white 1/5
2. a) 7 parts, 3/7 · b) 6 parts, 1/6 · c) 11 parts, 2/11
3. 2 of 7 parts shaded · a) 5/7 · b) 2 : 5
4. There are 1 + 2 = 3 parts in total, so the squares are 1/3 of the shapes, not 1/2. The ratio 1 : 2 compares squares with circles, not with the whole group.

CORE

1. a) 5/8 and 3/8 · b) 4/15 and 11/15 · c) 2/10 (= 1/5), 3/10 and 5/10 (= 1/2)
2. a) 3 : 7 · b) 5 : 7 · c) 1 : 2 : 1
3. Bag B. Bag A: 3/10 = 0.3 are red. Bag B: 2/5 = 0.4 are red, and 0.4 > 0.3.
4. A ratio compares part with part. 3 : 4 has 3 + 4 = 7 parts in total, so the first part is 3 out of 7. 3/4 compares the first part with the second part, not with the whole.

GREATER DEPTH

1. a) Always · b) Never – it is a/(a + b) · c) Always · d) Sometimes – true for 2 : 5, false for 5 : 2
2. Red 16, white 12, blue 20 · a) 16 : 12 : 20 = 4 : 3 : 5 · b) 20
3. 2k + 4 = 3k, so k = 4 · a) 12 girls · b) 12 boys
4. a) 6 : 4 : 5 · b) 4/15 · c) 1 part = 3, so 15 × 3 = 45 pieces of fruit