

TOPIC 2

# Positive Rational Numbers

**Lesson 2.1a/b**

Thinking Rationally  
Identifying and Ordering Rational Numbers  
6.NS

**Lesson 2.2a/b**

Did You Get the Part?  
Multiplying and Dividing with Fractions  
6.NS.1

**Lesson 2.3a/b/c**

Yours Is to Reason Why!  
Fraction by Fraction Division  
6.NS.1

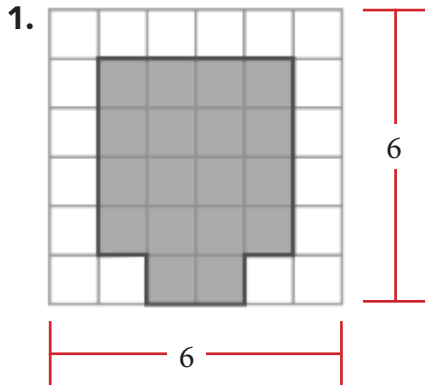


Objective Identifying and Ordering Rational Numbers

Warm-Up



Determine the fraction represented by the shaded part of each grid. If necessary, rewrite in lowest terms.



Sample worked out



1. Collect information

$$6 \times 6 = 36 \text{ total blocks}$$

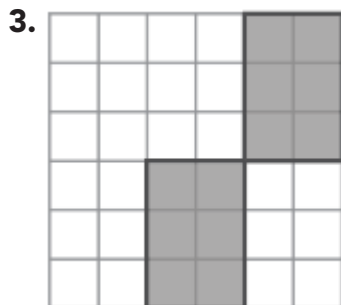
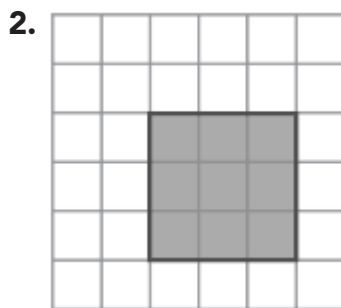
$$18 = \text{shaded blocks}$$

2. Set up fraction

$$\frac{18 \text{ shaded blocks}}{36 \text{ total blocks}} = \frac{18}{36}$$

3. Simplify the fraction

$$\frac{18 \div 18}{36 \div 18} = \frac{1}{2}$$





You can group numbers in many different ways.

1. Use the list of values listed below to work with your partner to create sorted groups. Take turns creating the sorted groups and document each sort into named sorted lists. You may sort the cards in any way you think is appropriate, but you must sort them into more than 1 group. Give each group of cards a title. Explain how you sorted the numbers and diagrams on the cards, including why you gave each group its title.

$\frac{1}{12}$	$\frac{3}{5}$	$\frac{5}{6}$	$\frac{3}{4}$	$\frac{1}{5}$
$\frac{1}{3}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{2}{3}$	$\frac{4}{5}$
$\frac{5}{8}$	$\frac{8}{8}$	$\frac{8}{4}$	$\frac{5}{5}$	$\frac{10}{5}$
0.4	0.6	0.1	0.2	0.06
0.75	0.5	1	0	$\frac{0}{1}$

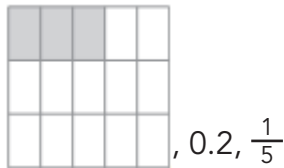
### Example

Fractions  
 $\frac{1}{12}$   $\frac{3}{5}$  add more

Other groups

Other groups

2. Vivianne grouped these cards together. What reason could she give for why she put these cards into the same group?



3. Danika and Josh explained how they sorted the numbers.

Danika

I grouped these numbers together because they all represent whole numbers.

$$\frac{8}{8}, \frac{5}{5}, \frac{10}{5}, 1, 0, \frac{0}{1}$$



a. Show why Danika's reasoning is correct.

b. Identify other numbers or diagrams that belong in Danika's group.

Josh

I grouped these numbers together because they are all equal.

$$\frac{3}{5}, \frac{3}{4}, \frac{3}{8}$$



c. Explain why Josh's reasoning is not correct.

d. Identify pairs of cards which show equal values. How many pairs can you find?



A positive rational number is a number that can be written in the form  $\frac{a}{b}$ , where  $a$  and  $b$  are both whole numbers greater than 0.

## WORKED EXAMPLE

Is 0.75 a rational number?

To write a decimal like 0.75 in the form  $\frac{a}{b}$ , where  $a$  and  $b$  are both whole numbers and  $b$  is not equal to 0:

- Read the decimal using place value.

0.75  $\longrightarrow$  seventy-five hundredths

- Write the decimal as a fraction.

0.75  $\longrightarrow$   $\frac{75}{100}$

The fraction  $\frac{75}{100}$  is written in the form  $\frac{a}{b}$ , where  $a$  is equal to 75 and  $b$  is equal to 100. The numbers 75 and 100 are both whole numbers greater than 0. So, 0.75 is a rational number

**1. Show that the decimals 0.6, 0.1, 0.2, and 0.325 are positive rational numbers.**

**2. Which numbers, if any, that you sorted are not positive rational numbers? Explain your answer.**

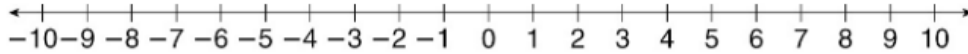


**LESSON 2.1a**  
**Thinking Rationally**



**Objective** Identifying and Ordering Rational Numbers

**Use the number line to compare each pair of integers. Write < or >.**



1. 10 ○ -2

2. 0 ○ 3

3. -5 ○ 0

4. -7 ○ 6

5. -6 ○ -9

6. -8 ○ -10

**Order the integers in each set from least to greatest.**

7. 5, -2, 6

8. 0, 9, -3,

9. -1, 6, 1

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Order the integers in each set from greatest to least.**

10. -1, 1, 0

11. -12, 2, 1

12. -10, -12, -11

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

13. 205, -20, -5, 50

14. -78, -89, 78, 9

15. -55, -2, -60, 0

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

16. 28, 8, -8, 0

17. 37, -37, -38, 38

18. -111, -1, 1, 11

\_\_\_\_\_

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