Name _____   Date _____

Many real world situations involve numbers that are less than zero.
For example, the thermometer activity you completed involved
some temperatures that were less than zero.

**For each real world situation below, write the *opposite* situation.**

1. 3,000 feet above sea level _____

2. $45 savings account withdrawal _____

3. 9 positive electrical charges _____

4. $488 checking account deposit _____

5. 1 foot below sea level _____

Solve.

6. The solar panels on the Jordan's home generate electricity.
During the month of August, the Jordan family used
570 kilowatt hours of electricity. If their electric bill for
August was $0.00, what amount of electricity did they
generate that month?

_____

**Each arrow on the Fahrenheit thermometer points to
a temperature. Write the temperature, and then write
the *opposite* temperature.**

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____
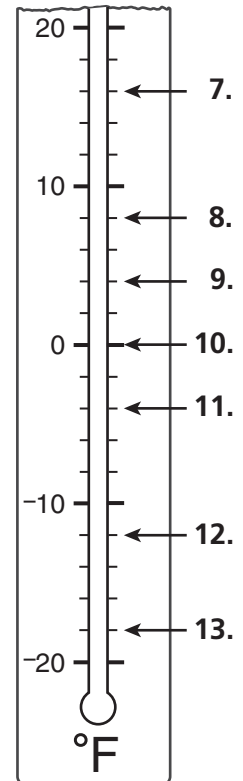
1. Jaquilynn's goal is to save $120. She has saved 40% of this. How much money has she saved?

   _____

Give three solutions to each inequality.

2. $8 < 6 + t$

   _____

3. $5 \cdot b \leq 28$

   _____

4. $36 > \frac{s}{4}$

   _____

5. $e - 22 \geq 29$

   _____

Solve.

6. Draw a dot plot that has 2 peaks, 2 clusters, 1 gap, a median of 16, and a range of 12.

7. Make a box plot to represent the dot plot data you drew in Exercise 6.

8. **Stretch Your Thinking** In the afternoon, it was 12°F. The temperature dropped 15°F in the evening. What was the temperature in the evening? Explain.

   _____

   _____

   _____

Name _____   **Date** _____

Solve.

1. What integer represents the origin of a number line? _____

2. Suppose a point is located 12 unit lengths below the origin
of a vertical number line. What integer represents the point? _____

3. On a horizontal number line, a point is located at $^+15$.
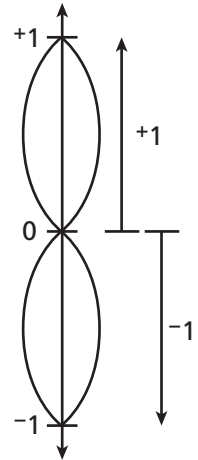Describe the *distance* and *direction* of the point.

_____

_____

Use the number line at the right for Exercises 4–6.

4. What do the loops on the number line show?

_____

5. How do the arrows for $^+1$ and $^-1$ show both *distance*
and *direction*?

_____

_____

_____

6. Are $^+1$ and $^-1$ opposite integers? Explain.

_____

_____

_____

7. On the number line below, draw a point at each tick mark,
and label each point with an integer.

Remembering

Name _____   **Date** _____

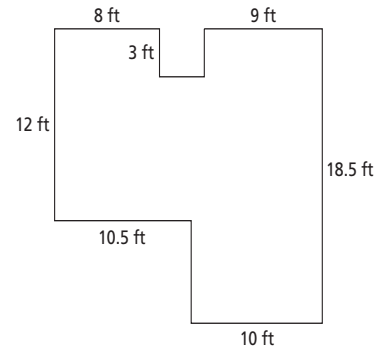**Solve.**

1. Passion Fruit purple paint is made from 7 parts red and 3 parts blue. How many gallons of red do you need to use to make 15 gallons of Passion Fruit purple paint?

_____

2. Mr. Kolb is putting hard wood flooring in the area of his house shown at the right. He is also putting crown molding around the edge of the area. How much flooring does Mr. Kolb need? How much molding?

_____

```
        8 ft        9 ft
       ┌─────┐  ┌────────┐
       │  3 ft│  │
12 ft  │      └──┘        │
       │                  │ 18.5 ft
       │                  │
       └──────┐           │
       10.5 ft│           │
              └───────────┘
                  10 ft
```

3. What is 15% of 80?

_____

4. 32% of what number is 112?

_____

5. 70 is what percent of 350?

_____

6. 95% of what number is 285?

_____

Each arrow on the Fahrenheit thermometer points to a temperature. Write the temperature, and then write the *opposite* temperature.
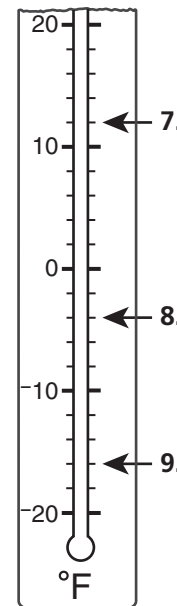
7. _____

8. _____

9. _____
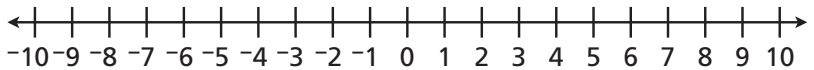
```
      20 ┤
         ┤
         ┤ ◄── 7.
      10 ┤
         ┤
         ┤
       0 ┤
         ┤ ◄── 8.
         ┤
     -10 ┤
         ┤ ◄── 9.
     -20 ┤
        °F
```

10. **Stretch Your Thinking** The temperature is 16°F cooler in the morning than in the afternoon. If it is 9°F below zero in the morning, what is the temperature in the afternoon? Explain.

_____

_____

_____

Name _____ **Date** _____

Compare. Write <, >, or =.

$$\overset{\longleftarrow\ \mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\mid\longrightarrow}{\text{-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 \ 0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6 \ 7 \ 8 \ 9 \ 10}}$$

1. ⁻3 ◯ ⁻5   **2.** ⁻7 ◯ ⁻1   **3.** 2 ◯ 9   **4.** 1 ◯ ⁻6

5. ⁻2 ◯ 0   **6.** ⁻4 ◯ ⁻8   **7.** ⁻6 ◯ ⁻5   **8.** 0 ◯ ⁻4

9. ⁻1 ◯ 6   **10.** ⁻3 ◯ ⁻2   **11.** ⁻8 ◯ ⁻8   **12.** ⁻3 ◯ ⁻9

Write the numbers in order from *least* to *greatest*.

13. ⁻3, 0, ⁻4 _____   **14.** ⁻6, ⁻7, ⁻5 _____

Write the numbers in order from *greatest* to *least*.

15. 0, ⁻2, 1, ⁻1 _____   **16.** ⁻3, 0, ⁻8, 3 _____

Use absolute value to compare the numbers.
Then write <, >, or =.

17. ⁻6 ◯ ⁻1   **18.** ⁻2 ◯ ⁻5   **19.** ⁻4 ◯ ⁻9   **20.** ⁻7 ◯ ⁻3

Solve. Use the situation below for Exercises 21 and 22.

On a Tuesday night during February in Brainerd, Minnesota,
the low temperature was ⁻7°F. On the next night, the low
temperature was ⁻4°F.

21. Explain how absolute value can be used to find the
warmer low temperature. Then name the temperature.

_____

_____

_____

22. Explain how a number line can be used to find the
colder low temperature. Then name the temperature.

_____

_____

_____

Name _____ **Date** _____

Remembering

Solve.

1. At a used book sale, all books are the same price. Jeff buys 15 books for $12. How much would 40 books cost?

   _____

2. How many cubic yards of topsoil will be used to cover a 10 yard by 12 yard playground if the topsoil is 24 inches deep?

   _____

3. Belinda used 85% of the pieces of wood that she had to build a bird house. If she used 68 pieces of wood, how many pieces of wood did she have in all?

   _____

4. Tommy is filling an 18-gallon aquarium with a 2-quart container. How many times does Tommy need to fill the container to completely fill the tank?

   _____

Write the opposite integer.

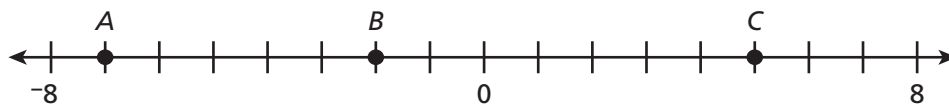5. 7 _____   6. $^-$27 _____   7. $^-$15 _____   8. 5 _____

9. $^-$12 _____   10. 23 _____   11. $^-$8 _____   12. $^-$18 _____

13. Write the value of points *A*, *B*, and *C*.

A		*B*				*C*	

    ```
         A              B                    C
    ←——+—●—+—+—+—+—+—●—+—+—+—+—+—+—●—+—+—→
       ⁻8              0                    8
    ```

    Point *A* _____   Point *B* _____   Point *C* _____

14. **Stretch Your Thinking** Jenna starts at $^-$5 on the number line. She jumps 8 places to the right. Then she jumps 5 places to the left. Where is Jenna on the number line? Explain.

    _____

    _____

    _____

Solve.

1. A point in the coordinate plane is on the *y*-axis and 8 units below the origin. What ordered pair represents the point? Explain your answer.

_____

_____

_____

2. The signs of the coordinates of an ordered pair are (+, —). In which quadrant is the point located? Explain your answer.

_____

_____

_____

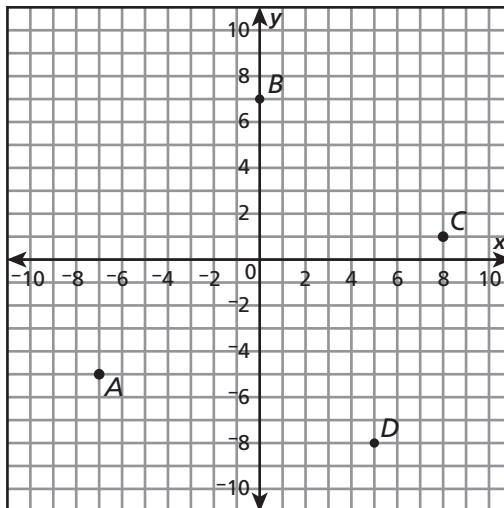**Use the coordinate plane below for Exercises 3–10.**

Write the location of each point.

3. Point *A* _____

4. Point *B* _____

5. Point *C* _____

6. Point *D* _____

Plot and label each point.

7. Point *W* at ($^-$3, 0)

8. Point *X* at (6, $^-$2)

9. Point *Y* at ($^-$4, $^-$10)

10. Point *Z* at ($^-$6, 6)

Remembering

Solve.

Stefan is buying books at the book fair. There is a $3 fee to enter the fair. Each book costs $0.75. Use this information for Exercises 1–2.

1. Write an equation that can be used to find the total cost in dollars, c, of buying b books.

_____

2. Use your equation to complete the table.

books, b	cost of books, c
1	
2	
3	
4	
5	

Compare. Write <, >, or =.

3. 8 ◯ ⁻7

4. ⁻5 ◯ ⁻4

5. ⁻10 ◯ 10

6. ⁻9 ◯ ⁻9

7. 11 ◯ ⁻1

8. ⁻1 ◯ ⁻3

9. ⁻5 ◯ 4

10. ⁻5 ◯ ⁻9

Write the numbers in order from _least_ to _greatest_.

11. 4, 9, ⁻4, ⁻6 _____

12. ⁻9, ⁻11, ⁻1, 2 _____

13. 0, 9, 5, ⁻3 _____

14. 2, ⁻3, ⁻4, ⁻6 _____

15. Stretch Your Thinking Gina, Sam, Tony, and Beth all have numbers. Gina's number is between Tony's and Beth's. Beth's number is the only one that is not negative. Sam's number is to the left of Tony's on the number line. If the numbers are 5, ⁻3, ⁻5, and ⁻6, which number belongs to which person?

_____

Integers and the Coordinate Plane

Name _____ **Date** _____

Use the number line at the right for Exercises 1–7.

1. What place value does the number line show?
   Explain how you know.

   _____

   _____

2. Label each tick mark to the right of the number line
   with a decimal.

3. Label each tick mark to the left of the number line with
   a fraction in simplest form.

4. Draw a point at 0.2. Label it *W*.

5. Draw a point at $^-\frac{7}{10}$. Label it *Z*.

6. Draw a point at $\frac{4}{5}$. Label it *Y*.

7. Draw a point at $^-0.9$. Label it *X*.

Solve.

8. On a number line, the rational number $^-\frac{9}{4}$ is located to the
   left of zero. The rational number $2\frac{1}{4}$ is located to the right of zero.
   Are the numbers opposite rational numbers? Explain.

   _____

   _____

Write the opposite rational number.

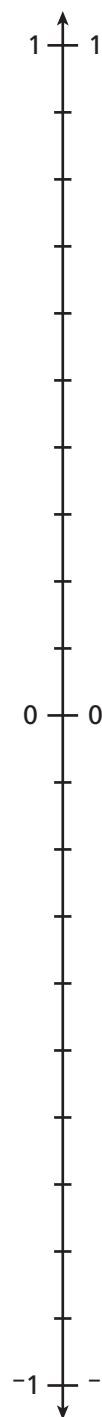9. $^-\frac{1}{3}$ _____   10. $\frac{5}{6}$ _____   11. $^-\frac{7}{16}$ _____   12. $\frac{3}{10}$ _____

Simplify.

13. $^-\left(-\frac{1}{3}\right)$ _____   14. $^-(0.75)$ _____   15. $^-(^-0.5)$ _____   16. $^-\left(\frac{4}{5}\right)$ _____

Remembering

1. Mr. Ruete's dog eats 3 packages of dog treats every
4 weeks. How many packages of dog treats does the
dog eat in 10 weeks?

_____

Solve for s.

2. $6s = 100$

$s =$ _____

3. $\frac{s}{6} = 100$

$s =$ _____

4. $44.53 \div 7.3 = s$

$s =$ _____

5. $27 \cdot 12.34 = s$

$s =$ _____

Use the coordinate plane for Exercises 6–13.

Write the location of each point.

6. Point A

_____
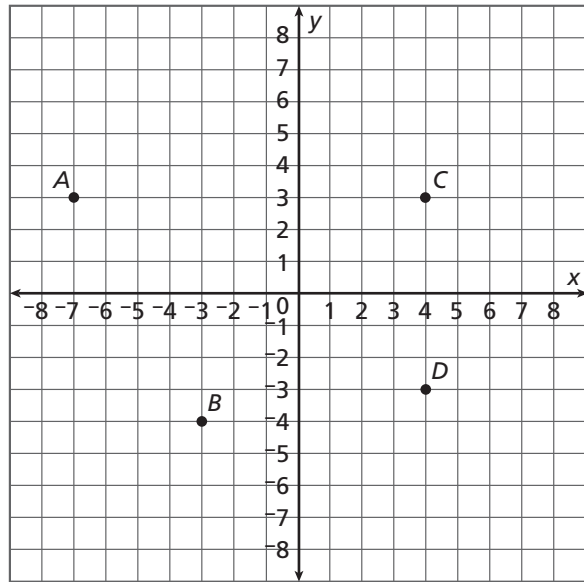
7. Point B

_____

8. Point C

_____

9. Point D

_____

Plot and label each point.

10. Point E at
(0, ⁻6)

11. Point F at
(3, ⁻7)

12. Point G at
(6, ⁻3)

13. Point H at
(⁻3, 4)

14. **Stretch Your Thinking** Courtney plotted a point (x, y)
where the absolute value of x is 2 times the absolute
value of y and the x-value is 18 less than the y-value.
What point did Courtney plot? Explain.

_____

_____

Rational Numbers on a Number Line

Solve.

1. Suppose two rational numbers are plotted on a *vertical* number line. Is the number that is below the other number the greater number, or the lesser number?

_____

2. Suppose two rational numbers are plotted on a *horizontal* number line. Is the number farther to the right the greater number, or the lesser number?

_____

Use the number line below for Exercises 3–17.
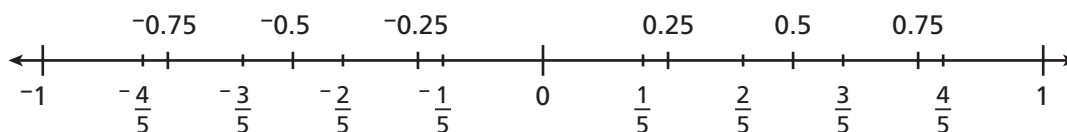
Compare. Write <, >, or =.

3. $\frac{1}{5}$ ◯ $\frac{^-2}{5}$

4. $^-0.75$ ◯ $^-0.5$

5. 0.25 ◯ $^-1$

6. $\frac{^-4}{5}$ ◯ $\frac{^-3}{5}$

7. $\frac{^-1}{5}$ ◯ $^-0.5$

8. $^-0.25$ ◯ 0

9. $\left|^-0.5\right|$ ◯ $\left|\frac{^-4}{5}\right|$

10. $^-1$ ◯ $\frac{^-5}{5}$

11. 1 ◯ $^-(^-0.75)$

12. $\left|\frac{^-3}{5}\right|$ ◯ $\left|\frac{3}{5}\right|$

13. 0 ◯ $\frac{2}{5}$

14. $\frac{^-2}{5}$ ◯ $^-(\frac{^-4}{5})$

Write the numbers in order from *greatest* to *least*.

15. $\frac{^-1}{5}, \frac{4}{5}, \frac{^-3}{5}$

16. $0, ^-0.75, ^-1, ^-0.5$

17. $^-0.25, \frac{2}{5}, 1, \frac{^-4}{5}$

_____   _____   _____

Solve.

18. On Monday morning, a stock began the day trading at $14.11 per share. At midweek, the stock traded at $14.28 per share. At the close of business on Friday, the share price was $13.97.

Write the share prices in order from least to greatest.

_____

Name _____ **Date** _____

Remembering

1. For every 8 multiple-choice questions on Minnie's math test, there are 5 short-answer questions. How many multiple-choice and short-answer questions are on a test with 65 questions?

   _____

Find the missing measure.

2. rectangle

   $w = 4.5\ m$

   $A = 94.5\ m^2$

   $l =$ _____

3. cube

   $SA = 294\ yd^2$

   $s =$ _____

4. octagon

   $P = 121.6\ cm$

   $s =$ _____

5. Write the value of each point as a decimal and as a fraction in simplest form.
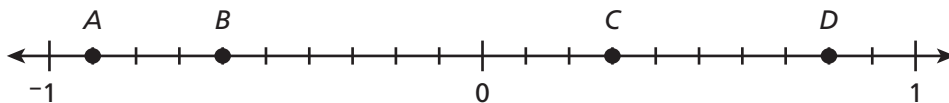
   Point A _____   Point B _____

   Point C _____   Point D _____

Write the opposite rational number.

6. $\dfrac{^-5}{6}$ _____

7. $1\dfrac{3}{5}$ _____

8. $^-3\dfrac{1}{4}$ _____

9. $\dfrac{7}{10}$ _____

10. **Stretch Your Thinking** Keyshawn plotted a point halfway between $\dfrac{^-1}{2}$ and $\dfrac{^-2}{5}$ on the number line. What number does Keyshawn's point represent? Write the number as a fraction in simplest form and as a decimal. Explain.
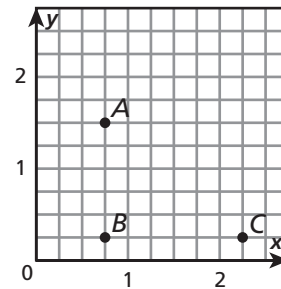
   _____

   _____

   _____

Compare and Order Rational Numbers

On the coordinate grid, Points *A*, *B*, and *C* represent ships at sea. Use the grid for Exercises 1–4.

1. Write the location of each point.

    Point *A* _____

    Point *B* _____

    Point *C* _____

2. Explain how subtraction can be used to find the number of unit lengths the ship at Point *A* is from the ship at Point *B*. Then write the distance.

    _____

    _____

3. Explain how subtraction can be used to find the number of unit lengths the ship at Point *C* is from the ship at point *B*. Then write the distance.

    _____

    _____

4. The ship at Point *B* is 300 nautical miles south of the ship at Point *A*, and 360 nautical miles west of the ship at Point *C*. What number of nautical miles does each unit length of the grid represent?

    _____

Solve.

5. Suppose a point at $(5\frac{1}{2}, 6\frac{1}{2})$ is reflected across the *y*-axis. Explain how to find the location of the reflected point, and then write its location.

    _____

    _____

6. Suppose a point at $(^-7.75, 7.25)$ is reflected across the *x*-axis. Explain how to find the location of the reflected point, and then write its location.
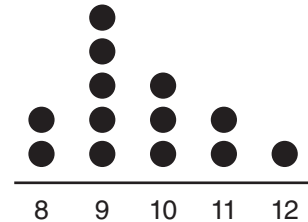
    _____

    _____

Name _____ **Date** _____

Remembering

1. It took the Lehman family 25 minutes to crack 60 eggs. How long did it take the family to crack each egg?

_____

Use the dot plot for Exercises 2–5.

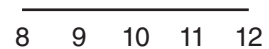**2.** What is the mean of the data? Round the answer to the nearest tenth.

_____

8   9   10   11   12

3. What is the median of the data?

_____

4. Find the first and third quartiles.

first quartile: _____   third quartile: _____

5. Make a box plot to represent the dot plot data.

8   9   10   11   12

Compare. Write <, >, or =.

6. $\frac{2}{5}$ ◯ $^-0.4$

7. $\frac{^-3}{5}$ ◯ $\frac{^-4}{5}$

8. $\frac{3}{10}$ ◯ 0.5

9. $\frac{^-5}{5}$ ◯ $^-1$

**10.** $^-0.25$ ◯ $\frac{^-1}{5}$

11. 0.75 ◯ $\frac{^-4}{5}$

12. $\frac{3}{4}$ ◯ 0.5

13. $\frac{^-1}{4}$ ◯ $^-0.25$

14. Stretch Your Thinking Judy recorded the temperature at the same time on Monday, Tuesday, and Wednesday. The temperatures she recorded were $^-2\frac{1}{2}°F$, $^-2.3°F$, and $^-2\frac{2}{5}°F$. Wednesday's temperature was colder than Tuesday's, but warmer than Monday's. What was the temperature on each day?

_____

Rational Numbers and the Coordinate Plane

Name _____   Date _____

**Plan a trip stopping at the five cities shown on the map
(or choose and label five cities of your own).**
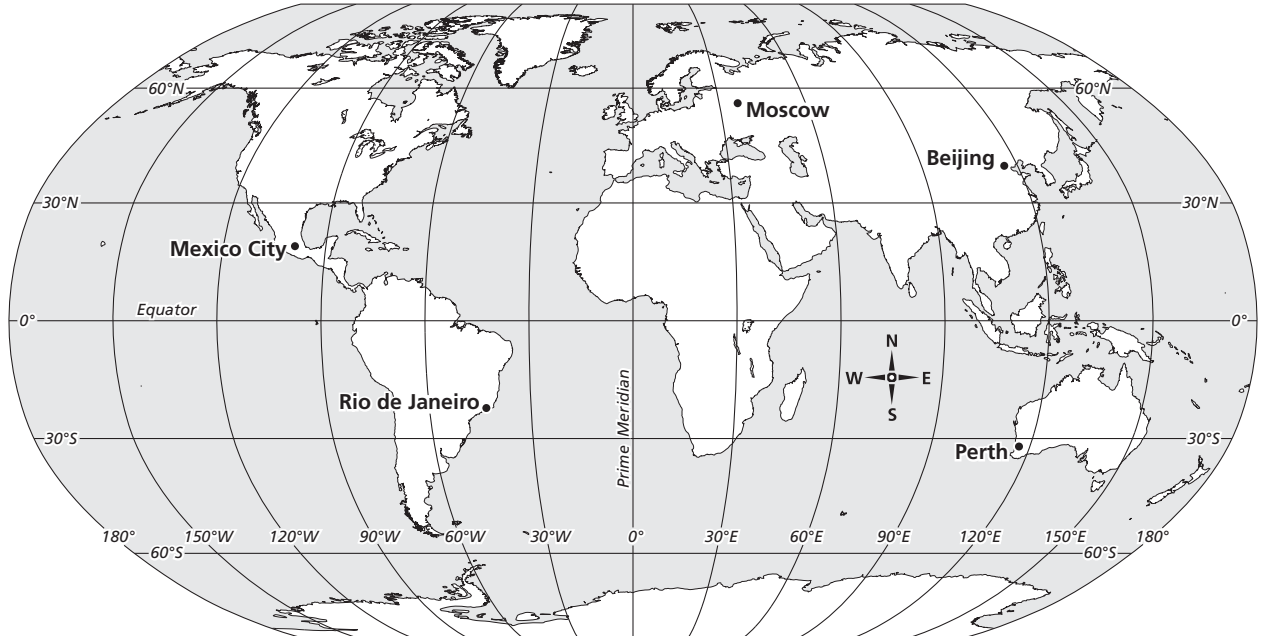
**Using + and − coordinates, write an ordered pair
to represent the approximate location of each city.**

1. Mexico City _____   **2.** Moscow _____

3. Perth _____   **4.** Rio de Janeiro _____

5. Beijing _____

6. Plan your route. Which city will you visit first? Second? And so on.

_____

_____

7. Use a map of the world or globe (or use the Internet with
a parent's or teacher's permission). Find or estimate the
distance between the cities on your route. Then estimate
the total distance of your trip. Is the total distance greater
than the distance around Earth (about 25,000 miles)?

_____

Remembering

1. It costs $15.50 to buy 8 yards of material. How much does it cost to buy 20 yards of the same material?

_____

Tell if the expressions are equivalent. Write *yes* or *no*.

2. $(5t)(3s)$ and $8ts$

3. $5(8s + 3r - 3s)$ and $25s + 15r$

4. $(4x)(4x)$ and $16x^2$

5. $3m + 3(m + 4)$ and $6m + 4$

On the coordinate grid below, Points *A*, *B*, *C*, and *D* represent locations in a town. Use the grid for Exercises 6–11. Write the location of each point using fractions.
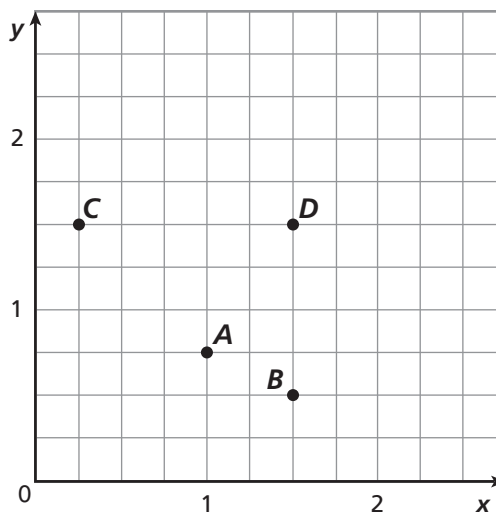
6. Point *A*

7. Point *B*

8. Point *C*

9. Point *D*

10. How far is Point *B* from Point *D*?

11. How far is Point *C* from Point *D*?

12. **Stretch Your Thinking** Suppose $(-2\frac{1}{2}, 1\frac{2}{5})$ was first reflected across the *y*-axis and then across the *x*-axis. What would be the new location and quadrant of the point? Explain.

_____

_____

_____

Focus on Mathematical Practices