

started in class

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Unit 7, Lesson 8: Writing and Graphing Inequalities

1. At the book sale, all books cost less than \$5.

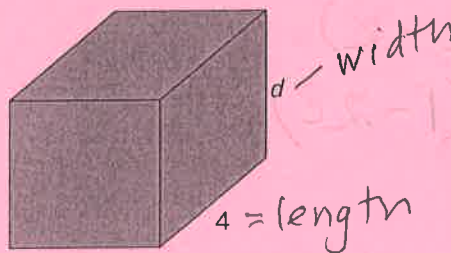
- What is the most expensive a book could be?
- Write an inequality to represent costs of books at the sale.
- Draw a number line to represent the inequality.

2. Kiran started his homework *before* 7:00 p.m. and finished his homework *after* 8:00 p.m. Let h represent the number of hours Kiran worked on his homework.

Decide if each statement it is definitely true, definitely not true, or possibly true. Explain your reasoning.

- $h > 1$
- $h > 2$
- $h < 1$
- $h < 2$

3. Consider a rectangular prism with length 4 and width and height d .



a. Find an expression for the volume of the prism in terms of d .

no answer

$$d \cdot d \cdot 4 \Rightarrow \underbrace{1 \times w \times h}_{d^2 \cdot 4}$$

b. Compute the volume of the prism when $d = 1$, when $d = 2$, and when $d = \frac{1}{2}$.

$$1 \cdot 1 \cdot 4 = 4 \text{ un}^3$$

$$2 \cdot 2 \cdot 4 = 16 \text{ un}^3$$

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{4}{1} = \frac{4}{4} = 1 \text{ un}^3$$

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(from Unit 6, Lesson 14)

4. Match the mathematical statements with the statements written in English. All of these statements are true.

A. $|-12| > -15$

1. The number -15 is further away from 0 than the number -12 on the number line.

B. $-15 < -12$

2. The number -12 is a distance of 12 units away from 0 on the number line.

C. $|-15| > |-12|$

3. The distance between -12 and 0 on the number line is greater than -15.

D. $|-12| = 12$

4. The numbers 12 and -12 are the same distance away from 0 on the number line.

E. $12 > -12$

5. The number -15 is less than the number -12.

F. $|12| = |-12|$

6. The number 12 is greater than the number -12.

(from Unit 7, Lesson 7)

5. Here are five sums. Use the distributive property to write each sum as a product with two factors. ()

a. $2a + 7a$ ^{common factor} $a(2+7)$

d. $r+r+r+r$ $r(1+1+1+1)$

b. $5z - 10$ $5(z-2)$

e. $2x - \frac{1}{2}$ challenge

c. $c - 2c^2$ $c(1-2c)$

(from Unit 6, Lesson 11)

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Unit 7, Lesson 9: Solutions of Inequalities

1. a. Select **all** numbers that are solutions to the inequality $k > 5$.
 - i. 4
 - ii. 5
 - iii. 6
 - iv. 5.2
 - v. 5.01
 - vi. 0.5
- b. Draw a number line to represent this inequality.
2. A sign on the road says: "Speed limit, 60 miles per hour."
 - a. Let s be the speed of a car. Write an inequality that matches the information on the sign.
 - b. Draw a number line to represent the solutions to the inequality.
 - c. Could 60 be a value of s ? Explain your reasoning.
3. One day in Boston, MA, the high temperature was 60 degrees Fahrenheit, and the low temperature was 52 degrees.
 - a. Write one or more inequalities to describe the temperatures T that are between the high and low temperature on that day.
 - b. Show the possible temperatures on a number line.
4. Select **all** the true statements.
 - A. $-5 < |-5|$
 - B. $|-6| < -5$
 - C. $|-6| < 3$
 - D. $4 < |-7|$

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E. $|-7| < |-8|$

(from Unit 7, Lesson 7)

5. Match each equation to its solution.

A. $x^4 = 81$

a. 2

B. $x^2 = 100$

b. 3

C. $x^3 = 64$

c. 4

D. $x^5 = 32$

d. 10

(from Unit 6, Lesson 15)

6. a. The price of a cell phone is usually \$250. Elena's mom buys one of these cell phones for \$150. What percentage of the usual price did she pay?
- b. Elena's dad buys another type of cell phone that also usually sells for \$250. He pays 75% of the usual price. How much did he pay?

(from Unit 3, Lesson 14)

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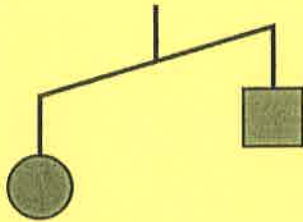
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Unit 7, Lesson 10: Interpreting Inequalities

1. There is a closed carton of eggs in Mai's refrigerator. The carton contains e eggs and it can hold 12 eggs.

- What does the inequality $e < 12$ mean in this context?
- What does the inequality $e > 0$ mean in this context?
- What are some possible values of e that will make both $e < 12$ and $e > 0$ true?

2. Here is a diagram of an unbalanced hanger.



a. Write an inequality to represent the relationship of the weights. Use s to represent the weight of the square in grams and c to represent the weight of the circle in grams.

- One red circle weighs 12 grams. Write an inequality to represent the weight of one blue square.
- Could 0 be a value of s ? Explain your reasoning.

3. Tyler has more than \$10. Elena has more money than Tyler. Mai has more money than Elena. Let t be the amount of money that Tyler has, let e be the amount of money that Elena has, and let m be the amount of money that Mai has. Select **all** statements that are true:

- $t < j$
- $m > 10$
- $e > 10$
- $t > 10$
- $e > m$
- $t < e$

4. a. Jada is taller than Diego. Diego is 54 inches tall (4 feet, 6 inches). Write an inequality that compares Jada's height in inches, j , to Diego's height.

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b. Jada is shorter than Elena. Elena is 5 feet tall. Write an inequality that compares Jada's height in inches, j , to Elena's height.

(from Unit 7, Lesson 8)

5. Which is greater, $\frac{-9}{20}$ or -0.5 ? Explain how you know. If you get stuck, consider plotting the numbers on a number line.

(from Unit 7, Lesson 3)

6. Select **all** the expressions that are equivalent to $(\frac{1}{2})^3$.

A. $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

B. $\frac{1}{2^3}$

C. $(\frac{1}{3})^2$

D. $\frac{1}{6}$

E. $\frac{1}{8}$

(from Unit 6, Lesson 13)

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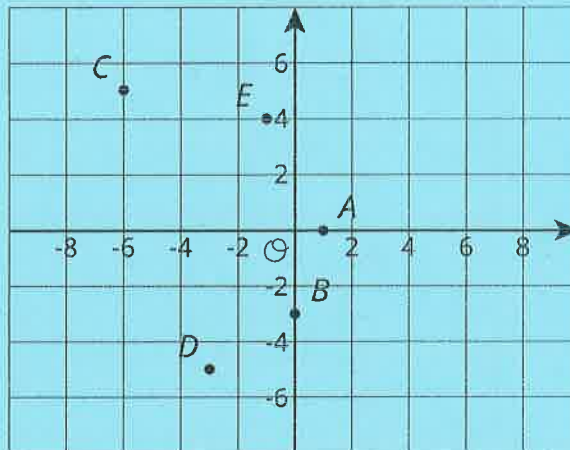
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Unit 7, Lesson 11: Points on the Coordinate Plane

1. a. Graph these points in a coordinate plane: $(-2, 3)$, $(2, 3)$, $(-2, -3)$, $(2, -3)$.

b. Connect all of the points. Describe the figure.

2. Write the coordinates of each point.



3. These three points form a horizontal line: $(-3.5, 4)$, $(0, 4)$, and $(6.2, 4)$. Name two additional points that fall on this line.

4. One night, it is 24°C warmer in Tucson than it was in Minneapolis. If the temperatures in Tucson and Minneapolis are opposites, what is the temperature in Tucson?

- A. -24°C
- B. -12°C
- C. 12°C
- D. 24°C

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(from Unit 7, Lesson 2)

5. Noah is helping his band sell boxes of chocolate to fund a field trip. Each box contains 20 bars and each bar sells for \$1.50.

a. Complete the table for values of m .

boxes sold (b)	money collected (m)
1	
2	
3	
4	
5	
6	
7	
8	

b. Write an equation for the amount of money, m , that will be collected if b boxes of chocolate bars are sold. Which is the independent variable and which is the dependent variable in your equation?

c. Write an equation for the number of boxes, b , that were sold if m dollars were collected. Which is the independent variable and which is the dependent variable in your equation?

(from Unit 6, Lesson 16)

6. Lin ran 29 meters in 10 seconds. She ran at a constant speed.

a. How far did Lin run every second?

b. *At this rate how far can she run in one minute?*

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Unit 7, Lesson 12: Constructing the Coordinate Plane

1. Draw and label an appropriate pair of axes and plot the points.

$$\left(\frac{1}{5}, \frac{4}{5}\right)$$

$$\left(-\frac{3}{5}, \frac{2}{5}\right)$$

$$\left(-1\frac{1}{5}, -\frac{4}{5}\right)$$

$$\left(\frac{1}{5}, -\frac{3}{5}\right)$$

2. Diego was asked to plot these points: $(-50, 0)$, $(150, 100)$, $(200, -100)$, $(350, 50)$, $(-250, 0)$. What interval could he use for each axis? Explain your reasoning.

3. a. Name 4 points that would form a square with the origin at its center.

b. Graph these points to check if they form a square.

4. Which of the following changes would you represent using a negative number? Explain what a positive number would represent in that situation.

a. A loss of 4 points

b. A gain of 50 yards

c. A loss of \$10

d. An elevation above sea level

(from Unit 7, Lesson 5)

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5. Jada is buying notebooks for school. The cost of each notebook is \$1.75.

a. Write an equation that shows the cost of Jada's notebooks, c , in terms of the number of notebooks, n , that she buys.

b. Which of the following could be points on the graph of your equation?

(1.75, 1) (2, 3.50) (5, 8.75) (17.50, 10) (9, 15.35)

(from Unit 6, Lesson 16)

6. A corn field has an area of 28.6 acres. It requires about 15,000,000 gallons of water. About how many gallons of water per acre is that?

A. 5,000

B. 50,000

C. 500,000

D. 5,000,000

(from Unit 5, Lesson 13)