**Multiple Choice:** Circle the letter of the correct answer. <u>Show all necessary work in the space provided.</u>

1. What is the value of the following expression when $x = -9$, $y = -2$ and $z = 3$?

$$\frac{x - z}{-y}$$

A. 6     B. -6

C. 3     D. -3

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2. Which of the following expressions below has the *greatest* value?

A. $5 - 9$          B. $-5 - 9$          C. $5 - (-9)$          D. $-5 - (-9)$

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3. Which statement **best** describes the value of $\sqrt{8}$ ? *Justify your response in the space below.*

A. The value of $\sqrt{8}$ is between 2 and 2.5.

B. The value of $\sqrt{8}$ is between 2.5 and 3.

C. The value of $\sqrt{8}$ is between 3 and 3.5.

D. The value of $\sqrt{8}$ is between 3.5 and 4.

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4. In which situation could the quotient of **-24 ÷ 3** be used to answer the question?

A. The temperature of a substance decreased by 24°C per minute for 3 minutes. What was the overall change of the temperature of the substance during that time?

B. A football team lost 24 yards on one play, then gained 3 yards on the next play. How many total yards did the team gain on the two plays?

C. Julia withdrew a total of $24 from her bank account over 3 days. She withdrew the same amount each day. By how much did the amount in her bank account change each day?

D. A cookie jar contains 24 cookies. Each child receives 3 cookies. How many children are there?

**Extended Response:**  <u>Show all necessary work</u>.

5. What value of $a$ will make this equation a true statement?  ***Justify your response***.

$$\left(-\frac{3}{4}+\frac{1}{2}\right)+a=0$$

6. Every month, Ms. Thomas pays her car loan through automatic payments (withdrawals) from her savings account.  She pays the same amount on her car loan each month.  At the end of the year, her savings account balance changed by $-\$2,931$ from payments made on her car loan.   What is the change in Ms. Thomas' savings account balance *each month* due to her car payment?

7. The water level in Ricky Lake changes at an average of $-\frac{7}{16}$ inch every 3 years.

   a) Based on the rate above, how much will the water level change after one year?

   b) How much would the water level change over a 7-year period?

   c) When written in decimal form, is your answer to part (b) a *repeating decimal* or a *terminating decimal*?  <u>Justify your answer using long division</u>.

8. The product of four numbers **a**, **b**, **c**, and **d**, is a negative number. The table shows one combination of positive and negative signs of the four numbers that could produce a <u>negative product</u>. Complete the table to show the seven other possible combinations.

| a | b | c | d |
|---|---|---|---|
| + | + | + | − |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |

9. The table below shows the temperature changes Monday morning in Bedford, New York over a 4 hour period after a cold front came through.

a) If the beginning temperature was −13°F at 5:00 a.m., what was the temperature at 9:00 a.m.?

| Change in Temperature | |
|---|---|
| 5:00 a.m. – 6:00 a.m. | −3°F |
| 6:00 a.m. – 7:00 a.m. | −2°F |
| 7:00 a.m. – 8:00 a.m. | −6°F |
| 8:00 a.m. – 9:00 a.m. | 7°F |

b) The same cold front hit Hartford, Connecticut the next morning. The temperature dropped by 7°F each hour from 5:00 a.m. to 9:00 a.m. What was the beginning temperature at 5:00 a.m. if the temperature at 9:00 a.m. was −10°F?

10. Determine whether the following real numbers are *rational* or *irrational*. **Justify your response with an explanation**.

a) $-7\frac{4}{5}$ _____

b) $\sqrt{40}$ _____

c) $0.\overline{2}$ _____