

Multiple Choice: Circle the letter of the correct answer. Show all necessary work in the space provided.

1. Which expression is equivalent to $9.6 + 4.4s - 2.8s + 4.8$?

- A. $0.8(6 + 2s)$
 $4.8 + 1.6s$
- B.** $1.6(9 + s)$
 $14.4 + 1.6s$
- C. $3.2(3 + 2s)$
 $9.6 + 6.4s$
- D. $7.2(2 + s)$
 $14.4 + 7.2s$
- Combine like terms in the above expression*
 $9.6 + 4.4s - 2.8s + 4.8$
 $9.6 + 4.8 + 4.4s + (-2.8s)$
 $14.4 + 1.6s$

For A – D, distribute the number outside of the () to each term

2. Which number is equivalent to $\frac{49}{11}$? $49 \div 11$

- A. 4.45
- B.** $4.\overline{45}$
- C. $4.4\overline{5}$
- D. 4.4545
- $$\begin{array}{r}
 4.4545\dots \\
 11 \overline{) 49.0000} \\
 \underline{-44} \\
 50 \\
 \underline{-44} \\
 60 \\
 \underline{-55} \\
 50 \\
 \underline{-44} \\
 60 \\
 \underline{-55} \\
 5
 \end{array}$$

3. Shelby has a \$20 gift card to an online music store. She downloads songs that cost \$1.20 each. Which expression models the amount of money she has left on the gift card if she downloads x songs?

- A. $1.20x - 20$
- B. $20x - 1.20$
- C.** $20 - 1.20x$
- D. $1.20 - 20x$
- To make sense of the situation, replace x with a friendly number. If Shelby downloaded 2 songs, what steps would you take to determine the amount of money she has left?*
 $2(1.20) = \$2.40$
 $20 - 2.40 = \$17.60$
 Plan of Action: $20 - (1.20)(2)$

4. One scuba diver descended 15 meters below the surface of a lake. Another diver descended 8 meters below the surface. At the same time, a seagull was flying 2 meters above the lake's surface, and another seagull was flying 10 meters above the surface. Which situation has the greatest absolute value in relation to the surface of the lake? [The surface of the lake is 0 feet.]

- A.** The scuba diver that is 15 meters below the lake's surface. $|-15| = 15$
- B. The scuba diver that is 8 meters below the lake's surface. $|-8| = 8$
- C. The seagull that is 2 meters above the lake's surface. $|2| = 2$
- D. The seagull that is 10 meters above the lake's surface. $|10| = 10$

5. Simplify the expression: $\frac{1}{2} \div \frac{-2}{3} \times \frac{3}{4} - \frac{4}{5}$ **PEMDAS**

A. $-\frac{9}{5}$

B. $-\frac{109}{80}$

C. $-\frac{21}{20}$

D. $\frac{3}{80}$

$$\frac{1}{2} \div \frac{-2}{3} \times \frac{3}{4} - \frac{4}{5}$$

K C F

$$\left[\frac{1}{2} \times \frac{-3}{2} \times \frac{3}{4} \right] - \frac{4}{5}$$

$$\frac{-9}{16} - \frac{4}{5}$$

K C O

$$\frac{-9}{16} + \frac{-4}{5}$$

Add equivalent fractions with a common denominator $\frac{5}{5} \cdot \frac{-9}{16}$ and $\frac{16}{16} \cdot \frac{-4}{5}$

$$\frac{-45}{80} + \frac{-64}{80}$$

$$\frac{-109}{80}$$

6. While doing her math homework, Nicole wrote the following sentence in her notebook:

$$\frac{1}{2} + \left(\frac{2}{3} + \frac{-4}{5} \right) = \left(\frac{1}{2} + \frac{2}{3} \right) + \left(-\frac{4}{5} \right)$$

Which property did Nicole use?

A. commutative property of addition

B. associative property of addition

C. distributive property

D. identity property of addition

Nicole changed the grouping symbols () among the numbers being added. She regrouped the addends by placing () around $\frac{1}{2}$ and $\frac{2}{3}$.

7. The size of a molecule is 6.02×10^{-23} units. If we magnify it one million times, what is the size of the image?

A. 6.02×10^{-18} units

B. 6.02×10^{-17} units

C. 60.2×10^{-17} units

D. 6.02×10^{-19} units

To magnify means to make a larger image, therefore multiply.

$$(6.02 \times 10^{-23}) \times (1,000,000)$$

$$(6.02 \times 10^{-23}) \times (1 \times 10^6)$$

$$(6.02 \times 1) \times (10^{-23} \times 10^6)$$

$$6.02 \times 10^{-23+6}$$

$$6.02 \times 10^{-17}$$

Extended Response: Show all necessary work.

8. What is the result when $0.81x - 0.45$ is subtracted from $3.28x + 1.4$? Final answer must be written in simplest form.

From comes first!

$(3.28x + 1.4) - (0.81x - 0.45)$ must have () around expressions

$3.28x + 1.4 - 0.81x + 0.45$ distribute the - sign

$$3.28x + 1.4 - 0.81x + 0.45$$

$3.28x + (-0.81x) + 1.4 + 0.45$ combine like terms

$$2.47x + 1.85$$

$$2.47x + 1.85$$

9. What is the value of the expression?

$$\frac{(4.5 \times 10^6)}{(1.5 \times 10^3)} \times (2.4 \times 10^{-8})$$

$$\frac{(4.5 \times 10^6)}{(1.5 \times 10^3)} \times (2.4 \times 10^{-8})$$

1st: Divide 4.5×10^6 by 1.5×10^3

2nd: Multiply the quotient with 2.4×10^{-8}

$$\frac{4.5}{1.5} \times \frac{10^6}{10^3}$$

$$3 \times 10^{6-3}$$

$$3 \times 10^3$$

$$(3 \times 10^3)(2.4 \times 10^{-8})$$

$$(3 \times 2.4) \times (10^3 \times 10^{-8})$$

$$7.2 \times 10^{-5}$$

10. Order the exponential expressions from **least** to **greatest**. Justify your response.

Evaluate each expression and then order from least to greatest.

$$(-2)^4$$

$$\frac{(-2)(-2)(-2)(-2)}{16}$$

$$4^{-2}$$

$$\frac{1}{4^2} = \frac{1}{16}$$

$$(2^2)^{-3}$$

$$\frac{2^{(2)(-3)}}{2^{-6}} = \frac{1}{2^6} = \frac{1}{64}$$

$$(-4)^3$$

$$\frac{(-4)(-4)(-4)}{-64}$$

$$4^0$$

$$1$$

$$(-4)^3$$

$$(2^2)^{-3}$$

$$4^{-2}$$

$$4^0$$

$$(-2)^4$$