

2021 Grade: 8 Algebra Readiness Summer Practice

Below is optional summer practice for those students who are interested in reinforcing concepts covered during this past school year. The purpose is to give students the opportunity to practice previously learned material based on the standards for the completed grade level and to maintain a solid mathematical foundation to adequately prepare for the 2021-2022 school year. Please note that these problems are optional.

Section 1

Evaluate the expression for $n = 2$, $m = 3$, and $t = 5$.

1. $3t - 4n$

2. $13 - (m + n)$

Compare. Write $<$, $=$, or $>$.

3. $-7 \underline{\hspace{1cm}} 7$

4. $32 \underline{\hspace{1cm}} |-32|$

5. $|-9| \underline{\hspace{1cm}} -3$

6. $|-8| \underline{\hspace{1cm}} |-6|$

Simplify each expression. Refer to the integer rules below.

<p>To add integers with the same sign, add absolute values and use the same sign.</p> <p>$3 + 5 = 8$ $-2 + -4 = -6$</p> <p>To add integers with different signs, subtract absolute values and use the sign of the integer with the greater absolute value.</p> <p>$-7 + 3 = ?$ $-7 - 3 = 7 - 3 = 4$ Use the sign of -7. So, $-7 + 3 = -4$</p>	<p>To subtract an integer, add its opposite</p> <p>$3 - (-2) = 3 + 2$ The opposite of -2 is 2 $= 5$</p> <p>$3 - 4 = 3 + (-4)$ The opposite of 4 is -4 $= -1$</p> <p>$-4 - (-5) = -4 + 5$ The opposite of -5 is 5 $= 1$</p>
<p>If two integers have the same sign, the product is positive.</p> <p>$8 \cdot 7 = 56$ $-8 \cdot (-7) = 56$</p> <p>If two integers have opposite signs, the product is negative.</p> <p>$(-8) \cdot 7 = -56$ $8 \cdot (-7) = -56$</p>	<p>If two integers have the same sign the quotient is positive.</p> <p>$8 \div 2 = 4$ $(-8) \div (-2) = 4$</p> <p>If two integers have opposite signs, the quotient is negative.</p> <p>$(-8) \div 2 = -4$ $8 \div (-2) = -4$</p>

7. $-6 + 4$

8. $-4 + (-5)$

9. $-2 - 6$

10. $-8 - (-5)$

11. $15 - (-8)$

12. $-15 \cdot (-5)$

13. $2 \cdot (-7) \cdot 5$

14. $\frac{-12}{6}$

15. $\frac{-80}{-16}$

Section 1 - Constructed Response Task

Respond fully to the task.

16. Tides are measured by the heights of the tides above or below sea level. The difference between the two heights represent how much greater the high tide is than the low tide. The table shows the high and low tides and the difference between their heights at each of three locations. Some of the data in the table are missing.

Tide Heights and Differences in Feet

Location	High Tide	Low Tide	Difference Between High and Low Tides
P	8.53	0.63	?
Q	6.98	-0.94	7.92
R	?	-1.02	6.75

- Find the difference between high and low tides for location P. Show your work and explain your answer below.
- Find high tide for location R. Show your work and explain your answer below.

Section 2

Solve each equation.

1. $a - 10 = 12$

2. $-3x = 27$

3. $6n + 3 = 21$

4. $10 = \frac{m}{5} + 2$

5. $-b + 2 = -\frac{1}{2}$

6. $7g - 4 = 10$

Simplify each expression.

7. $6x + 4 - 3x$

8. $7(h - 5)$

9. $13q + 91 - 13q$

10. $-(8z + 2z - 1)$

Solve each equation.

11. $16 = -(2 - 2b)$

12. $0 = 1.5(7 - k) - k$

13. $123 = 9y + 4 - 7y$

14. $4(2.2d - 1) - 0.8d = 23$

Section 2 - Constructed Response Task

Respond fully to the task.

15. A family purchased tickets to a museum and spent a total of \$38.00. The family purchased 4 tickets. There was a \$1.50 processing fee for each ticket. Write and solve an equation that can be used to find x , the cost of one ticket to the museum. Show your work and explain your answer below.

Section 3

Write the fraction in simplest form.

1. $\frac{20}{25}$

2. $\frac{7}{77}$

3. $\frac{-9}{42}$

4. $\frac{36}{63}$

Write each decimal as a mixed number or fraction in simplest form.

5. 0.45

6. 12.2

7. $0.\overline{8}$

Compare. Write $<$, $=$, or $>$.

8. $\frac{25}{36}$ _____ $0.6\overline{94}$

9. 2.7 _____ $\frac{10}{3}$

10. -4.3 _____ -4.2

11. $\frac{-17}{5}$ _____ -15.9

Simplify. Write each answer in simplest form.

12. $-\frac{3}{8} + \frac{7}{8}$

13. $3\frac{1}{2} - (-\frac{11}{14})$

14. $\frac{-3}{7} \cdot \frac{5}{9}$

15. $-4\frac{5}{24} \cdot (-6)$

16. $-2\frac{1}{2} \div 6$

17. $-25 \div \frac{5}{7}$

Simplify or evaluate each expression.

18. $-3^2 - (-8)$

19. $(-2)^3 + 4 \div 2 - 3$

20. $(3 - 4)^5 - 17 + 1^{12}$

21. $2r^2 + 6r + 3$ for $r = -6$

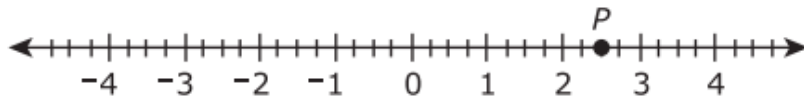
22. $-c^3 + 2c^2 - c + 8$ for $c = 3$

Section 3 - Constructed Response Tasks

Respond fully to each task.

23.

Point P is plotted on the number line.



Part A:

Point Q is the opposite of point P . Determine the location of a point Q on the number line and plot it on the number line above. Explain below how you determined the location of point Q on the number line.

Part B:

Point S is located at $\frac{5}{4}$ on the number line. A student claims that the location of point S is to the right of the location of point P on the number line.

- Explain whether the student's claim is correct or incorrect.
- Write an inequality that describes the relationship between the value of point P and the value of point S .

Write your explanation and answer below.

24. A teacher writes the following expression on the board.

$$12.2x + 50.6y + 3(1.4x - 2.6y)$$

Part A

A student writes the two expressions shown below:

Expression 1: $4(4.1x + 10.7y)$

Expression 2: $2(6.1x + 25.3y + 2.1x - 3.9y)$

The student claims that both of the expressions are equivalent to the expression written on the board. Explain why the student's claim is true or false. Show your work for both expressions and explanation below.

Part B

A different student claims that the expression $59.2xy$ is equivalent to the teacher's expression. The student's reasoning is below.

The expression $59.2xy$ is equivalent to the teacher's expression because both expressions have the same value when $x = 1$ and $y = 1$. This means that the two expressions are equivalent.

- Explain which part of the student's reasoning is correct.
- Explain which part of the student's reasoning is incorrect.
- Give an example using different values for x and y to support your answer.

Write your answer and explanation below.

25. Jackie wrote the following expression on the board.

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

Part A

Which computation can be performed first to determine the correct answer?

A. $\frac{2}{3} + \frac{3}{5}$

C. $\frac{3}{4} + \frac{1}{2}$

B. $\frac{3}{5} - \frac{3}{4}$

D. $-\frac{3}{4} + \frac{1}{2}$

Part B

Jackie made an error when trying to determine the value of the expression.

Here are the steps she used.

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

Step 1: $\frac{2}{3} \left(-\frac{3}{20} \right) + \frac{1}{2} \div \frac{1}{4}$

Step 2: $-\frac{1}{10} + \frac{1}{2} \div \frac{1}{4}$

Step 3: $-\frac{1}{10} + \frac{1}{8}$

Step 4: $\frac{1}{40}$

Determine where Jackie made her error. State the step where the error was made and explain Jackie's error below.

Part C

Determine the correct value of the expression. Be sure to show all steps and work below.