

Incoming 8th Grade

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Which expression is equivalent to  $4 - (-7)$ ?

- A.  $7 + 4$
- B.  $4 - 7$
- C.  $-7 - 4$
- D.  $-4 + 7$

2. Which expression can go in the blank to make the equation true?

$$-4.5 + 4.4 + \underline{\quad ? \quad} = 0$$

- A.  $-6.7 + 6.8$
- B.  $-6.7 + (-6.6)$
- C.  $7.2 + (-7.2)$
- D.  $7.2 + (-7.3)$

3. What is the value of  $(-\frac{1}{4} - \frac{1}{2}) \div (-\frac{4}{7})$ ?

- A.  $-1\frac{5}{16}$
- B.  $-\frac{3}{7}$
- C.  $\frac{3}{7}$
- D.  $1\frac{5}{16}$

4. Which situation results in a final value of zero?

- A. The temperature after a decrease of  $5^{\circ}\text{F}$  from a temperature of  $-5^{\circ}\text{F}$ .
- B. The height of an airplane after taking off from ground level and rising 1,000 feet.
- C. The amount of money received in change after making a \$10 purchase with a \$20 bill.
- D. The distance above sea level after increasing 24 meters from a depth of 24 meters below sea level.

5. Yesterday, the temperature at noon was  $11.4^{\circ}\text{F}$ . By midnight, the temperature had decreased by 15.7 degrees. What was the temperature at midnight?

- A.  $-4.3^{\circ}\text{F}$
- B.  $-11.4^{\circ}\text{F}$
- C.  $-15.7^{\circ}\text{F}$
- D.  $-27.1^{\circ}\text{F}$

6. The table below shows the weekly change in the price of one gram of gold for four weeks.

**ONE GRAM OF GOLD**

Week	Weekly Change in the Price (dollars)
1	+1.25
2	-3.125
3	+0.625
4	+1.5

By how much did the price of one gram of gold change from the beginning of week 1 to the end of week 4? Did the price increase or decrease?

*Explain how you found your answer.*

At the end of week 4, the price per gram of gold was \$39.28. What was the price per gram of gold at the beginning of week 1?

7. Which expression represents a factorization of  $32m + 56mp$ ?
- A.  $8(4m + 7p)$
  - B.  $8(4 + 7)mp$
  - C.  $8p(4 + 7m)$
  - D.  $8m(4 + 7p)$

8. Which expression is equivalent to  $8c + 6 - 3c - 2$  ?

- A.  $5c + 4$
- B.  $5c + 8$
- C.  $11c + 4$
- D.  $11c + 8$

9. Which expression is equivalent to  $(-18) - 64n$ ?

- A.  $-2(9 - 32n)$
- B.  $2(9 - 32n)$
- C.  $-2(9 + 32n)$
- D.  $2(9 + 32n)$

10. Which expression is equivalent to  $n + n - 0.18n$ ?

- A.  $1.18n$
- B.  $1.82n$
- C.  $n - 0.18$
- D.  $2n - 0.82$

11. Which expression is equivalent to  $-\frac{1}{3}(6x + 15) - 3$ ?

- A.  $-2x + 12$
- B.  $-2x + 2$
- C.  $-2x - 2$
- D.  $-2x - 8$

12. Graham's monthly bank statement showed the following deposits and withdrawals:

$-\$25.20, \$52.75, -\$22.04, -\$8.50, \$94.11$

If Graham's balance in the account was \$47.86 at the beginning of the month, what was the account balance at the end of the month?

13. Josh has a rewards card for a movie theater.

- He receives 15 points for becoming a rewards card holder.
- He earns 3.5 points for each visit to the movie theater.
- He needs at least 55 points to earn a free movie ticket.

Which inequality can Josh use to determine  $x$ , the minimum number of visits he needs to earn his first free movie ticket?

- A.  $55 \geq 3.5x + 15$
- B.  $55 \geq 15x + 3.5$
- C.  $55 \leq 3.5x + 15$
- D.  $55 \leq 15x + 3.5$

14. Ms. Gartland bought  $x$  number of shirts for the new members of her chorus. The cost for  $x$  number of shirts, including \$3.99 shipping, was \$77.49. Each shirt cost \$12.25. There was no sales tax on this purchase. Which equation could be used to find  $x$ ?

- A.  $3.99(x + 12.25) = 77.49$
- B.  $3.99x + 12.25 = 77.49$
- C.  $12.25(x + 3.99) = 77.49$
- D.  $12.25x + 3.99 = 77.49$

15. Winston needs at least 80 signatures from students in his school before he can run for class president. He has 23 signatures already. He and two of his friends plan to get the remaining signatures during lunch. If each person gets the same number of signatures, which inequality can Winston use to determine the minimum number of signatures each person should get so he can run for class president?

- A.  $3x + 80 \geq 23$
- B.  $3x + 80 \leq 23$
- C.  $3x + 23 \geq 80$
- D.  $3x + 23 \leq 80$

16. A triangle has side lengths of  $(5.5x + 6.2y)$  centimeters,  $(4.3x + 8.3z)$  centimeters, and  $(1.6z - 5.1y)$  centimeters. Which expression represents the perimeter, in centimeters, of the triangle?

- A.  $11.4xz + 9.4yz$
- B.  $11.7xy + 12.6xz - 3.5yz$
- C.  $9.8x + 1.1y + 9.9z$
- D.  $9.8x + 7.8y + 3.5z$

17. Addison wants to ride her bicycle more than 80 miles this week. She has already ridden her bicycle 18 miles. Which inequality could be used to determine the mean number of miles,  $m$ , she would need to ride her bicycle each day for six more days to achieve her goal?

- A.  $6m + 18 < 80$
- B.  $6m - 18 < 80$
- C.  $6m + 18 > 80$
- D.  $6m - 18 > 80$

18. Mr. Gonzales has only \$42.50 to spend at a clothing store. He wants to buy a shirt that costs \$29, including tax, and some bracelets that cost \$4.50 each, including tax.

Write an equation to determine  $x$ , the maximum number of bracelets Mr. Gonzales could buy.

Solve the equation to determine the number of bracelets Mr. Gonzales could buy.

19. Nick is making bread dough.

- The recipe requires  $\frac{3}{4}$  cup of flour and  $1\frac{1}{8}$  teaspoons of salt.
- Nick wants to make the recipe using 1 cup of flour.

To maintain the ratio, how much salt is required when 1 cup of flour is used?

- A.  $\frac{27}{32}$  teaspoon
- B.  $\frac{2}{3}$  teaspoon
- C.  $1\frac{1}{2}$  teaspoons
- D.  $1\frac{7}{8}$  teaspoons

20. A crew of highway workers paved  $\frac{2}{15}$  mile in 20 minutes. If they work at the same rate, what portion of a mile will they pave in one hour?

- A.  $\frac{1}{150}$
- B.  $\frac{2}{45}$
- C.  $\frac{2}{5}$
- D.  $\frac{5}{2}$

21. Last week Len spent \$18 to bowl 4 games. This week he spent \$27 to bowl 6 games. Len owns his bowling ball and shoes, so he only has to pay for each game that he bowls. If each of these bowling games costs the same amount of money, what is the constant of proportionality between the money spent and the number of games played?

- A. 1.5
- B. 2.0
- C. 4.5
- D. 9.0

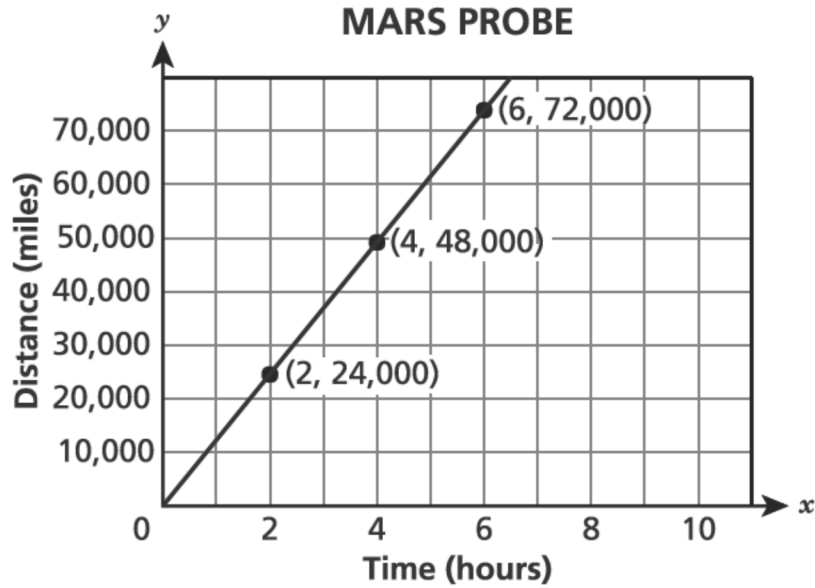
22. A vehicle uses  $1\frac{1}{8}$  gallons of gasoline to travel  $13\frac{1}{2}$  miles. At this rate, how many miles can the vehicle travel per gallon of gasoline?

- A.  $\frac{16}{243}$
- B.  $\frac{4}{3}$
- C. 12
- D. 13

23. A recipe requires  $\frac{1}{3}$  cup of milk for each  $\frac{1}{4}$  cup of water. How many cups of water are needed for each cup of milk?

- A.  $\frac{1}{12}$
- B.  $\frac{3}{4}$
- C.  $\frac{11}{12}$
- D.  $1\frac{1}{3}$

24. The graph shows the relationship between  $x$ , the amount of time in hours, and  $y$ , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

*Justify your answer.*

Determine the number of miles the probe travels in 5.5 hours.

25. The label on a  $1\frac{1}{2}$ -pound bag of wildflower seeds states that it will cover an area of 375 square feet. Based on this information, what is the number of square feet that 1 pound of wildflower seeds will cover?

- A.  $\frac{1}{250}$
- B. 250
- C.  $562\frac{1}{2}$
- D. 750

26. A convenience store sells two brands of orange juice. Brand A contains 8 fluid ounces and costs \$1.28. Brand B contains 12 fluid ounces and costs \$1.68.

What is the difference in cost, in dollars, per fluid ounce between the two brands of juice?

27. The table below lists the masses and volumes of several pieces of the same type of metal. There is a proportional relationship between the mass and the volume of the pieces of metal.

**PIECES OF METAL**

<b>Mass (grams)</b>	<b>Volume (cubic centimeters)</b>
34.932	4.1
47.712	5.6
61.344	7.2
99.684	11.7

Determine the mass, in grams, of a piece of this metal that has a volume of 15.3 cubic centimeters. Round your answer to the nearest tenth of a gram.

28. A group of friends went to lunch. The bill, before sales tax and tip, was \$37.50. A sales tax of 8% was added. The group then tipped 18% on the amount after the sales tax was added. What was the amount, in dollars, of the sales tax?

What was the total amount the group paid, including tax and tip?