

May 28, 2021

NAME _____ DATE _____

Grade 7 End of Year Review

1. The relation that is represented by the equation $y = 45 - 3x$ has the domain $\{5, 7, 9, 11\}$. Which of the following sets is the range of the relation?

- A. $\{5, 7, 9, 11\}$
B. $\{30, 24, 18, 12\}$
C. $\{40, 38, 36, 34\}$
D. $\{15, 21, 27, 33\}$

| x | $45 - 3x$ | y |
|----|-------------------|----|
| 5 | $45 - 3 \cdot 5$ | 30 |
| 7 | $45 - 3 \cdot 7$ | 24 |
| 9 | $45 - 3 \cdot 9$ | 18 |
| 11 | $45 - 3 \cdot 11$ | 12 |

2. What is the probability of tossing a penny and landing on heads three times in a row?

- F. $\frac{3}{2}$
G. $\frac{1}{2}$
H. $\frac{1}{4}$
J. $\frac{1}{8}$

tossing a penny on heads = $\frac{1}{2}$

$$3 \text{ times} \rightarrow \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$

3. Which word phrase is equivalent to the expression $4x + 8$?

- A. four cents more than eight dimes
B. eight cents plus four cents
C. eight cents more than four nickels
D. eight cents times four nickels

$+8 \rightarrow$ "8 more than"

4. Kyle wants to determine the most popular sport among students at his school. Which of the following will likely result in a biased sample?

F. surveying every 5th student standing in the lunch line

G. surveying a random sample of 3 students from each homeroom

H. surveying a random sample of 25 students attending a school football game

J. surveying every 10th student who enters the school one morning

Biased means not fair; not an equal chance of being chosen

↖ If going to a football game, student may be more likely to choose football

5. **SHORT ANSWER** The table shows the number of goals scored by the Cougars so far this soccer season.

| | | | | | |
|--------------|---|---|---|---|---|
| Game | 1 | 2 | 3 | 4 | 5 |
| Goals Scored | 3 | 2 | 6 | 5 | 4 |

What is the mean absolute deviation?

$$\text{mean} = (3 + 2 + 6 + 5 + 4) \div 5 = 4$$

| | | | | |
|----|----|----|----|----|
| 4 | 4 | 6 | 5 | 4 |
| -3 | -2 | -4 | -4 | -4 |
| 1 | 2 | 2 | 1 | 0 |

$$\text{MAD} = (1 + 2 + 2 + 1 + 0) \div 5 = 6 \div 5 = \boxed{1.2}$$

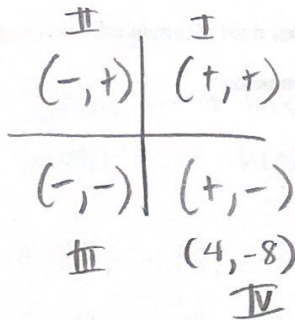
6. In which quadrant on the coordinate plane is point (4, -8)?

A. Quadrant I

B. Quadrant II

C. Quadrant III

D. Quadrant IV



11. Which of the following shows the rational numbers in order from least to greatest?

F. 81.5% , $0.81\bar{5}$, $\frac{33}{40}$ = $0.8150, 0.8155\dots, 0.825$

G. 81.5% , $\frac{33}{40}$, $0.81\bar{5}$

H. $0.81\bar{5}$, $\frac{33}{40}$, 81.5%

J. $0.81\bar{5}$, 81.5% , $\frac{33}{40}$

$$\begin{array}{r} 0.825 \\ 40 \overline{) 33.000} \\ \underline{320} \\ 100 \\ \underline{80} \\ 200 \end{array}$$

12. The table shows the number of points selected players have at the end of a game.

| Player | Points |
|--------|--------|
| A | -10 |
| B | -50 |
| C | -5 |
| D | 0 |
| E | -15 |

The player with the highest score wins the game. Which list shows the order of the players from fifth place to first place?

F. D, C, A, E, B

G. B, E, A, C, D

H. D, C, A, B, E

J. B, C, A, D, E

fifth \rightarrow first
lowest \rightarrow highest

-50, -15, -10, -5, 0
B E A C D

13. **SHORT ANSWER** A computer store builds custom computers by allowing customers to choose 1 of 4 different CPUs, 1 of 8 hard drives, and 1 of 3 video cards. How many different computers are possible?

Fundamental Counting Principle \rightarrow multiply each # of possible outcomes of each event

$$4 \times 8 \times 3 = \textcircled{96}$$

14. What is the next number in the pattern?

2916, -972, 324, -108, 36, ...

F. -18

G. -12

H. -3

J. 12

15. Which of the following show the fractions $\frac{2}{5}$, $\frac{3}{8}$, $\frac{1}{3}$, $\frac{1}{2}$ and $\frac{5}{12}$ in order from greatest to least?

F. $\frac{1}{3}$, $\frac{3}{8}$, $\frac{2}{5}$, $\frac{1}{2}$, $\frac{5}{12}$

G. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{5}$, $\frac{3}{8}$, $\frac{5}{12}$

H. $\frac{1}{3}$, $\frac{3}{8}$, $\frac{2}{5}$, $\frac{5}{12}$, $\frac{1}{2}$

J. $\frac{1}{2}$, $\frac{5}{12}$, $\frac{2}{5}$, $\frac{3}{8}$, $\frac{1}{3}$

Find common denominator (120) or make decimal.

$$\frac{2}{5} = 0.40$$

$$\frac{3}{8} = 0.375$$

$$\frac{1}{3} = 0.33... \text{ least}$$

$$\frac{1}{2} = 0.50 \text{ greatest}$$

$$\frac{5}{12} = 0.42$$

16. Megan surveyed a random sample of 60 students at her school and found that 42 of them ride the bus to school each day. If there are 320 students at Megan's school, about how many of them ride the bus to school each day?

- A. 348 students
- B. 224 students
- C. 188 students
- D. 132 students

$$\frac{42}{60} = \frac{x}{320}$$

$$x = 224$$

17. The product of three consecutive whole numbers is 990. What is the sum of the three whole numbers?

- F. 30
- G. 33
- H. 63
- J. 96

~~$$x \cdot (x+1) \cdot (x+2) = 990$$

$$(x+1)(x+2)$$~~

18. Hector drove 185 miles to a business meeting. His business partner drove $\frac{5}{4}$ of this distance to get to the same meeting. How many more miles did the business partner drive than Hector?

- F. $231\frac{1}{4}$ mi
- G. $186\frac{3}{4}$ mi
- H. $46\frac{1}{4}$ mi
- J. $37\frac{3}{4}$ mi

$$\frac{185 \cdot 5}{4} = \frac{925}{4} = 231.25$$

$$- 185.00$$

$$\hline 46.25$$

19. Earth's atmosphere is 78% nitrogen by volume. About how much nitrogen is in a tank containing 600 cubic meters of air?

- A. 132 m^3
- B. 169 m^3
- C. 420 m^3
- D. 468 m^3

$$0.78 \times 600 = 468$$

20. Isaac runs $16\frac{1}{4}$ miles each week. He runs $6\frac{3}{8}$ miles on Sunday and $4\frac{2}{5}$ miles on Tuesday. How many miles does he run on Thursday if it is the only other day that he runs that week?

F. $6\frac{1}{40}$ mi

G. $6\frac{1}{3}$ mi

H. $5\frac{2}{3}$ mi

J. $5\frac{19}{40}$ mi

Sun + Tues = $6\frac{3}{8} + 4\frac{2}{5} =$

$6\frac{15}{40} + 4\frac{16}{40} = 10\frac{31}{40}$

Total - (Sun + Tues) = Thurs,

$16\frac{1}{4} - 10\frac{31}{40} =$

$16\frac{10}{40} - 10\frac{31}{40} = 5\frac{19}{40}$ mi.

21. Which fraction lies between 0.70 and 0.75 on the number line?

F. $\frac{1}{7} \leftarrow$ less than $\frac{1}{2} \Rightarrow$ NO

G. $\frac{4}{7} \leftarrow$ too close to $\frac{1}{2}$ No

H. $\frac{9}{11}$

J. $\frac{18}{25} \times \frac{4}{4} = \frac{72}{100} = 0.72$

$\frac{0.8}{1.0} \Rightarrow$ NO
 $\frac{88}{100}$

22. Pauli buys 6 stalks of celery for \$5.34. What is the unit price of celery?

A. \$0.89 per pound

B. \$0.92 per pound

C. \$0.96 per pound

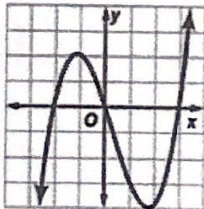
D. \$1.06 per pound

$\frac{\$5.34}{6 \text{ stalks}}$

Divide.

$$\begin{array}{r} 0.89 \\ 6 \overline{) 5.34} \\ \underline{-48} \\ 54 \\ \underline{-54} \\ 0 \end{array}$$

23. SHORT ANSWER Is the relationship shown in the graph a function? Explain.



Yes - it passes the vertical line test

24. What value of d makes the equation $\frac{1}{20} = \frac{4}{5}d$ true?

- F. $d = \frac{1}{4}$
- G. $d = \frac{1}{16}$
- H. $d = \frac{1}{25}$
- J. $d = \frac{1}{80}$

$$\frac{1}{20} = \frac{4}{5}d$$

KCF

$$\frac{1}{20} \cdot \frac{5}{4} = d$$

$$\frac{1}{16} = d$$

25. LaKeisha has a set of five cards numbered 1 through 5. She shuffles the cards and chooses one card at random. She repeats the process several times and records the results in the table below. Based on her results, what is the experimental probability of choosing a 3?

| | | | | | |
|-----------|---|---|---|---|---|
| Number | 1 | 2 | 3 | 4 | 5 |
| Frequency | 6 | 4 | 5 | 3 | 7 |

- A. 20%
- B. 24%
- C. 25%
- D. 30%

$$\frac{5}{6+4+5+3+7} = \frac{5}{25} = \frac{1}{5} = 20\%$$

26. The spinner is spun twice. What is the probability that it will land on 8 after the first spin and on an odd number after the second spin?



land on 8 $\rightarrow \frac{1}{8}$

land on odd $\rightarrow \frac{1}{2}$

- A. $\frac{1}{64}$
- B. $\frac{1}{16}$
- C. $\frac{1}{10}$
- D. $\frac{1}{8}$

$$\text{Both} = \frac{1}{8} \times \frac{1}{2} = \frac{1}{16}$$

27. Which number belongs to the set of rational numbers and the set of integers?

F. -5.5

H. -0.5

G. $-\frac{1}{15}$

J. -15

28. Katarina buys floor mats for her car. The floor mats are marked \$49.99 but she has a coupon for 60% off. Which equation can be used to find the sale price of the floor mats?

A. $s = 49.99(0.40)$

B. $s = 49.99(1.40)$

C. $s = 49.99(0.60)$

D. $s = 49.99(1.60)$

If 60% off, you pay 40%

29. Which expression shows the factored form of $20x + 4$?

E. $4(5x + 1)$

G. $4x + 5x \cdot 2 + 2$

H. $20x + 4$

J. $5(4x + 4)$

$$4(5x + 1)$$

30. Jillian rents a water tricycle for a few hours. The total cost for the rental is represented by the expression $2(18 + 2.75h)$. What is the coefficient in the simplified expression?

A. 2.75

B. 5.5

C. 18

D. 36

Use distributive property to simplify.

$$2(18 + 2.75h)$$

$$2 \times 18 + 2 \times 2.75h$$

$$36 + 5.5h$$

↑
coefficient → # in front of variable

31. Saccoro invested \$3800 for $3\frac{1}{2}$ years. She earned \$983.25 in simple interest. What was the annual interest rate, to the nearest hundredth of a percent?

- F. 0.74%
- G. 5.35%
- H. 7.39%
- J. 13.53%

$$I = p \cdot r \cdot t$$

$$983.25 = 3800 \cdot r \cdot 3.5$$

$$\frac{983.25}{13,300} = \frac{13,300 \cdot r}{13,300}$$

$$0.07392... = r$$

32. The relation $\{(8, 5), (-8, -5), (-4, 3), (4, 3)\}$ is *not* a function when which ordered pair is added to the set?

- F. $(-4, 5)$
- G. $(-5, 8)$ ✗
- H. $(3, -4)$ ✗
- J. $(-3, -8)$ ✗

Need another of same x

33. Which expression has the same value as $-3(-5 + y)$?

- A. $-3(5) - 3y$
- B. $(3 - 5) \cdot (-3 - y)$
- C. $-3(-5) + (-3)y$
- D. $(-3 - 5) \cdot (-3 + (-y))$

$$-3(-5 + y)$$

$$-3 \cdot (-5) + (-3) \cdot y$$

$$15 + -3y$$

34. Suppose for some value of y the solution of the equation $0.5x - y = 0$ is $x = 20$. What must be true about y ?

- F. $y = -20$
- G. $y = -1$
- H. $y = 0$
- J. $y = 10$

$$0.5(20) - y = 0$$

$$10 - y = 0$$

$$\downarrow$$

$$10 - 10 = 0$$

35. The cost of a tank of gas at \$4.15 per gallon was more than \$44.70. Which inequality can be used to find out how many gallons of gas were purchased?

- F. $4.15g < 44.70$ H. $4.15g > 44.70$
 G. $4.15g \geq 44.70$ J. $4.15g \leq 44.70$

times g

>

36. Which equation can be used to represent the following sentence?

Two less than the product of five and a number is -12.

- A. $2 - 5n = -12$
 B. $-12 - 2 = -5n$
 C. $5n - 12 = 2$
 D. $5n - 2 = -12$

$5n - 2$

product means multiply