

**Solutions for Rumack's Preparation Workbook: 1.2**

1. Compare each fraction to  $\frac{1}{2}$  by converting  $\frac{1}{2}$  to an equivalent fraction with the same denominator as the suggested answer.

(A)  $\frac{19}{36} > \frac{18}{36}$     (B)  $\frac{14}{29} < \frac{14.5}{29}$     (C)  $\frac{11}{21} > \frac{10.5}{21}$     (D)  $\frac{6}{7} > \frac{3.5}{7}$     (E)  $\frac{2}{3} > \frac{1.5}{3}$

Answer: (B)  $\frac{14}{29}$

2. To find a rule for adding an odd number and an even number, write an expression and then simplify. Remember that EVEN + 1 = ODD and ODD + 1 = EVEN.

$$\begin{aligned} & \text{ODD} + \text{EVEN} \\ &= \text{EVEN} + 1 + \text{EVEN} \\ &= \text{EVEN} + \text{EVEN} + 1 \\ &= \text{EVEN} + 1 \\ &= \text{ODD} \end{aligned}$$

Answer: (A) odd

3. To find the absolute value of the sum of the sequence, add the terms first, and then find the absolute value of the answer.

$$\begin{aligned} & 0 + (-1) + (+2) + (-3) + (+4) + (-5) \\ &= 0 + (-1) + (-3) + (-5) + (+2) + (+4) && \text{Group negative integers together and positive integers together} \\ &= (-9) + (+6) \\ &= -3 \end{aligned}$$

Find the absolute value:  $|-3| = 3$

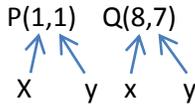
Answer: (D) 3

4. To find a general rule for one quarter of an odd number greater than 3, try a simple example.

$$\begin{aligned} & \frac{1}{4} \text{ of } 5 \\ &= \frac{1}{4} \times 5 \\ &= \frac{1}{4} \times \frac{5}{1} \\ &= \frac{5}{4} \text{ or } 1\frac{1}{4} \end{aligned} \quad \text{Answer: (D) an improper fraction}$$

5. To find an even positive integer between 60 and 64, consider integers in this range, but not including 60 or 64. 61 is odd, 62 is even and 63 is odd. Answer: (C) 62

6. To find the horizontal distance between two points, calculate the difference in  $x$ -values because the  $x$ -axis is horizontal.



$8 - 1 = 7$  Subtract the smaller number from the larger number because you want a positive answer—distance is always positive. Answer: (A) 7

7. To find the missing fraction, write an equation and solve.

$$\frac{3}{8} + ? = 1$$

$$\frac{3}{8} + \frac{?}{8} = \frac{8}{8}$$

$$\frac{3}{8} + \frac{5}{8} = \frac{8}{8} \quad \text{Answer: (C) } \frac{5}{8}$$

8. To find the missing number, find half the distance between 1 and 8, and then add to 1 or subtract from 8.

Find distance from 1 to 8:  $8 - 1 = 7$

Find half of this by dividing by 2:  $7 \div 2 = 3.5$

Add the answer to 1:  $1 + 3.5 = 4.5$       OR      Subtract the answer from 8:  $8 - 3.5 = 4.5$

Answer: (B) 4.5

9. To find the difference, subtract.

$$2^2 - 2 \times 2 = 4 - 4 = 0$$

10. To find the best description, simplify  $M$  first, and then simplify  $M$  divided by 2.

$$M = N - 1$$

$$M = \text{ODD} - 1$$

$M = \text{EVEN}$       If 1 is subtracted from any odd number, the answer is always even.

$M \div 2 = \text{Integer}$       An even number is a multiple of 2, but when divided by 2, the result can be even or odd. Examples:  $10 \div 2 = 5$  (ODD),  $8 \div 2 = 4$  (EVEN)

Answer: (A) Integer

11. Determine the  $x$ - and  $y$ -values of each point and check if each statement is true or false.



I. FALSE, not the same location

II. TRUE,  $2 = 2$

III. TRUE,  $5 = 5$

Answer: (E) Both ii and iii

12. To find the sum, simplify and add.

$$3^2 + 3 \times 2 = 9 + 6 = 15 \quad \text{Answer: (C) 15}$$

13. Write an expression and then simplify.

$$(EVEN + EVEN) \div 2 - 1$$

$$= EVEN \div 2 - 1$$

$$= (\text{Integer, even or odd}) - 1$$

$$= \text{Integer, even or odd}$$

Answer: (C) either even or odd

14. To find the true statement, simplify each equation and determine if it is true or false.

(A)  $|-4| = |17 - 12|$

$$4 = |5|$$

$$4 = 5 \quad \text{FALSE}$$

(B)  $|+3| = |19 - 21|$

$$3 = |-2|$$

$$3 = 2 \quad \text{FALSE}$$

(C)  $|+9| = |-7 - 2|$

$$9 = |-9|$$

$$9 = 9 \quad \text{TRUE}$$

Answer: (C)

(D)  $|-2| = (-2)$

$$2 = -2 \quad \text{FALSE}$$

(E)  $|-6| = (-3)^2$

$$6 = 9 \quad \text{FALSE}$$

15. Answer: (B) (5,4). Subtract 2 from the x-value and add 2 to the y-value. (7, 2) becomes (7-2, 2+2) = (5,4).

16. Determine if there is a number pattern, and what kind. It is increasing, and each term is the sum of the two previous numbers.

7, 10, 17, 27, 44, 71.

$$7+10=17, 10+17=27, 17+27=44, 27+44=71$$

The answer is (D). Add the previous number to the current number to get the next number.

17. To find the increment by which the number line increases, calculate the difference between the two known points that are side-by-side.  $2.50 - 1.25 = 1.25$ . Answer: (D) 1.25

18. To find the difference between the unknown points, calculate the difference between two known points which are the same difference apart.  $6.0 - 2.0 = 4$ . Answer: (C) 4

19. To find the value of n, try each choice and check if the answer is a whole number. An improper fraction is a whole number when the numerator divided by the denominator has no remainder. The

answer is (B)  $\frac{27}{10} + \frac{3}{10} = \frac{30}{10} = 3$

20. Determine if there is a number pattern, and what kind. The sequence is decreasing by 5 each time. The answer is (E) None of the above. Why not "(A) Every number ends in a 3 or an 8"? Although this statement is true, it does not explain how the sequence changes.

21. To find the difference, subtract.  $15^2 - 15 \times 2 = 225 - 30 = 195$ . The answer is (C) 195.

22. To find the missing number, find half the distance between 2.2 and 7.2, and then subtract from 2.2. Find the distance from 2.2 to 7.2:  $7.2 - 2.2 = 5.0$ . Find half of this by dividing by 2:  $5.0 \div 2 = 2.5$ . Subtract 2.5 from 2.2 to get (D) -0.3.  $2.2 - 2.5 = (+2.2) + (-2.5) = -0.3$

23. To find the missing number, find half the distance between 3.0 and 9.0, and then add to 9.0. Find distance from 3 to 9:  $9 - 3 = 6$ , find half of 6 by dividing by 2,  $6 \div 2 = 3$ , and add the answer to 9:  $9 + 3 = 12$ . The answer is (A) 12.0

24. To find the answer, subtract and add.  $12^2 - 11^2 + 10^2 = 144 - 121 + 100 = 23 + 100 = 123$ . The answer is (B) 123.

25. To find the difference, subtract.  $7^2 - 6 \times 2 = 49 - 12 = 37$ . The answer is (A) 37.