

Level A - Form 1 - Applied Mathematics: Patterns, Functions, Algebra

Sample Question

Which equation means that 6 more than a number is 24?

A $6 + 24 = x$

B $6x = 24$

C $6 + x = 24$

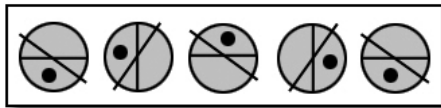
D $6 \times 24 = x$

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1. A community started an adult softball league. The first year there were 19 players. The next year there were 23 players. The third year there were 27 players and the fourth year 31 players. If this pattern continues, how many players will there be in the sixth year?

- A 35
- B 33
- C 43
- D 39

2. If this pattern continues, which figure will be next in the sequence?

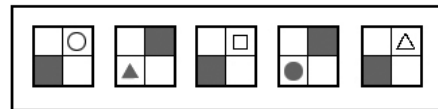


- F
- G
- H
- J

3. Britney earns m dollars a month. Her car payment is c dollars a month and her rent is three times her car payment. Which expression shows the amount Britney has left after she pays these bills?

- A $m - (c - 3c)$
- B $c + 3c - m$
- C $m - c - 3$
- D $m - (c + 3c)$

4. If this pattern continues, which of the figures will be next?




- F
- G
- H
- J

5. Which of these equations represents the statement "4 more than twice a number is 16"?

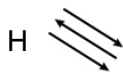
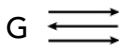
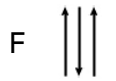
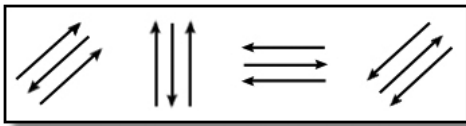
- A $4 \times 2x = 16$
- B $2x - 4 = 16$
- C $4 + 2x = 16$
- D $2 + 4x = 16$

A local home improvement store created a table to help their customers decide how many rolls of wallpaper they will need. Study the table. Then do Numbers 6 through 7.

 Number of Rolls Needed to Wallpaper Rooms				
Distance Around the Room (in feet)	Wall Height			
	8 ft	10 ft	12 ft	Ceiling
36	14	16	20	4
40	14	18	22	4
44	16	20	24	6
48	18	22	26	6
52	18	24	28	8
56	20	26	30	8
60	22	26	32	10
64	22	28	34	10
68	24	30	36	12
72	26	32	38	12

6. If the pattern shown in this chart continues, how many rolls of wallpaper would it take to paper the walls of a room with a perimeter of 84 feet if the walls are 10 feet high?
- F 44
 - G 40
 - H 36
 - J 38
7. Tom is papering the walls in two rooms. Both rooms have a perimeter of 48 feet with walls 8 feet high. He will also paper the ceiling in one of the rooms. In which of these equations does n represent the number of rolls of wallpaper he will need?
- A $2(18 + 6) = n$
 - B $2(18) + 6 = n$
 - C $2(18 - 6) = n$
 - D $\frac{18+6}{2} = n$

8. Look at the pattern of arrows. Which figure will come next?



9. At the market, apples are \$0.45 each and oranges are \$0.33 each. If Danny has \$8.00, which inequality represents the number of oranges (n) he could buy if he already bought 5 apples?

- A $n \leq \frac{\$8.00 - (\$0.45 \times 5)}{\$0.33}$
- B $n \leq \frac{\$8.00 - (\$0.33 \times 5)}{\$0.45}$
- C $n \geq \frac{\$8.00 - (\$0.33 \times 5)}{\$0.45}$
- D $n \geq \frac{\$8.00 - (\$0.45 \times 5)}{\$0.33}$

10. What are the next two numbers in this sequence?

$$30, 24, 18, 12, 6, \underline{\quad}, \underline{\quad}$$

F 1, -6

G -6, 12

H 0, -6

J 0, -1

11. What values of y will make the inequality true?

$$3y - 4 > 20$$

A $y > 8$

B $y > 6$

C $y < 8$

D $y < 6$

12. Which of these values for n makes the inequality true?

$$-2 < 3 + n < 2$$

F 1

G -1

H -2

J -5

13. Solve for t in $3t - 5 \geq 1$.

A $t \geq 6$

B $t \geq 2$

C $t \geq -2$

D $t \geq -1$

Study the table below with input and output numbers. Then do Numbers 14 through 15.

Input x	3	-4	0	-1	1
Output y	5	-9	-1	-3	1

14. What rule is applied to the input number to produce the output number?
- F multiply by 2, then subtract 1
 - G multiply by 2, then add 1
 - H multiply by -1 , then add 2
 - J multiply by 1, then subtract 2
15. What would be the output number if the input number is -2 ?
- A 5
 - B 3
 - C -3
 - D -5

16. At Pizza Palace, a large cheese pizza costs \$9.00. There are 15 different toppings (T) to choose from that cost \$0.75 each. Which equation represents the cost (C) of a large pizza?

F $C + T = \$9.75$

G $\frac{C}{\$0.75} = \frac{\$9.00}{15T}$

H $15T + \$9.00 = C$

J $C = \$9.00 + \$0.75T$

17. When a 350 degree oven is turned off, the temperature decreases by 5 degrees per minute. The equation $350 - 5m = T$ can be used to determine the oven temperature, T , after it was turned off for m minutes. Which equation can be used to determine the minutes m the oven was off?

A $m = \frac{350}{-5T}$

B $m = 350 - \frac{T}{5}$

C $m = \frac{T - 350}{-5}$

D $m = \frac{T - 350}{5}$

18. Solve $6x - 4y = 8$ for y .

F $y = \frac{3}{2}x - 2$

G $y = 6x + 2$

H $y = 2 - 6x$

J $y = 2 + \frac{3}{2}x$

19. $y = \frac{1}{2}x + 16$ is the same as

A $y + \frac{1}{2}x = 16$

B $2y - x = 16$

C $2y - x = 32$

D $y - \frac{1}{2}x = 32$

20. Solve for y . $15x = 3y - 5$

F $y = \frac{3}{5}x - \frac{1}{3}$

G $y = \frac{5}{3}x + 5$

H $y = 5x + \frac{5}{3}$

J $y = \frac{3}{5}x + 5$