1. **Quantity A** **Quantity B**

2^{60} 8^{20}

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

2. $x^2 - 5x = 6 - y^2 + 3y = 9y + 9$

Quantity A **Quantity B**

x y

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

3. Working at a constant rate, Bob can produce $\frac{x}{3}$ widgets in 8 minutes. Working at a constant rate, Jack can produce $2x$ widgets in 40 minutes, where $x > 0$.

Quantity A	Quantity B
The number of minutes it will take Bob to produce $5x$ widgets	The number of minutes it will take Jack to produce $6x$ widgets

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

4. $t > 1$

Quantity A	Quantity B
$\frac{1}{(1 + \frac{3}{2^t})}$	$\frac{1}{(1 + \frac{3}{3^t})}$

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

5. From 1992 to 1993, the price of a home increased by x%. From 1993 to 1994, the price of the home then decreased by x%.

Quantity A	Quantity B
The price of the home at the beginning of 1992	The price of the home at the beginning of 1994

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

6.

Quantity A	Quantity B
The product of the consecutive integers from 20 through 73, inclusive	The product of the consecutive integers from 18 through 72, inclusive

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

7. Line p is defined by the equation $2y + 3x = 6$

Quantity A	Quantity B
The y-intercept of line p	The x-intercept of line p

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

8. The length of rectangle x is 20% greater than the length of rectangle y. The width of rectangle x is 20% less than the width of rectangle y.

Quantity A	Quantity B
The area of rectangle x	The area of rectangle y

- ☐ A. if Quantity A is greater;
- ☐ B. if Quantity B is greater;
- ☐ C. if the two quantities are equal;
- ☐ D. if the relationship cannot be determined from the information given.

9. If the function $f(x)$ is defined as $f(x) = 3(x + 2) + 5$, then $f(a - 2) =$

- ☐ A. $3a$
- ☐ B. $3a + 5$
- ☐ C. $3a + 11$
- ☐ D. $3a - 1$
- ☐ E. $3a - 6$

10. If the ratio of stocks to bonds in a certain portfolio is 5:3, then which of the following CANNOT be the total number of stocks and bonds?

- ☐ A. 8
- ☐ B. 50
- ☐ C. 120
- ☐ D. 160
- ☐ E. 200

11. What is the greatest integer, x, such that $\left(\frac{125^x}{25^5}\right) < 1$?

12. For this question, indicate all of the answer choices that apply.

If $(x^3)(y^5) > 0$, and $(x^2)(z^3) < 0$, which of the following must be true?

- ☐ A. $x > 0$
- ☐ B. $z < 0$
- ☐ C. $xy > 0$
- ☐ D. $yz < 0$
- ☐ E. $\frac{(x^2)}{z} < 0$
- ☐ F. $xyz < 0$

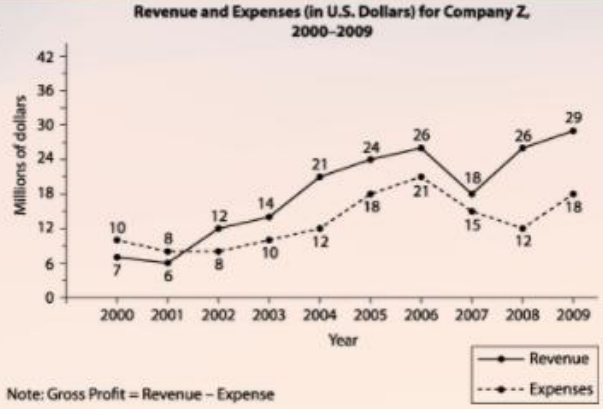
13. Five friends agree to split the cost of a lunch equally. If one of the friends does not attend the lunch, the remaining four friends would each have to pay an additional $6. What is the cost of the lunch?

- ☐ A. 20
- ☐ B. 24
- ☐ C. 80
- ☐ D. 100
- ☐ E. 120

14. If a six-sided die is rolled three times, what is the probability that the die will land on an even number exactly twice and on an odd number exactly once?

- A. $\frac{1}{8}$
- B. $\frac{1}{4}$
- C. $\frac{3}{8}$
- D. $\frac{1}{2}$
- E. $\frac{7}{8}$

15.

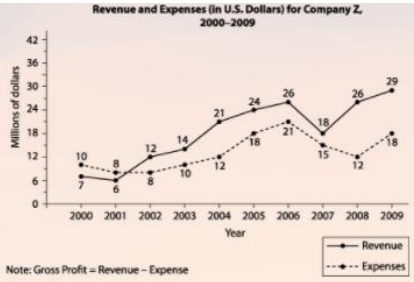


Note: Gross Profit = Revenue – Expense

For how many years did expenses exceed revenue?

- A. 1
- B. 2
- C. 3
- D. 7
- E. 8

16.



The percent change in profit from 2007 to 2008 is approximately what percent greater than the percent change in profit from 2008 to 2009?

- A. 500%
- B. 6
- C. 1,500%
- D. 1,600%
- E. 1,700%

17.

If the revenues in 2009 were $3 million less, and the expenses for 2009 were $4 million more, then the average (arithmetic mean) annual profit for the 10 years shown would be approximately how much less?

- A. $300,000
- B. $400,000
- C. $600,000
- D. $700,000
- E. $1,000,000

18. In 1998, the list price of a home was $\frac{1}{3}$ greater than the original price. In 2008, the list price of the home was $\frac{1}{2}$ greater than the original price. By what percent did the list price of the home increase from 1998 to 2008?

- A. 10%
- B. 12.5%
- C. $16\left(\frac{2}{3}\right)\%$
- D. $33\left(\frac{2}{3}\right)\%$
- E. 50%

19.

The figure above represents a square photograph bordered by a frame that has a uniform width of 3 inches. If the frame and the picture have the same area, and each of the photograph's sides measures x inches, which of the following equations is true?

- A. $(x+6)^2 = 2x^2$
- B. $(x+3)^2 = 2x^2$
- C. $(x+9)^2 = 2x^2$
- D. $(x+3)^2 = 4x^2$
- E. $(x+6)^2 = 4x^2$

20. On the xy-plane, the center of circle O is at point (3, 2). If the point (10, 2) lies outside of the circle and the point (3, 8) lies inside of the circle, which of the following could be the radius of the circle?

- A. 5
- B. 5.5
- C. 6
- D. 6.5
- E. 7