

**\*\*Note we are adding these problems to your order because ADA has included some of these problems on some versions of the test, please review**

**For questions 1 to 8, compare the 2 given quantities using the information provided.**

**If quantity A is larger choose (A). If quantity B is larger choose (B). If the 2 quantities are equal choose (C). If the relationship cannot be determined choose (D)**

1.

$$x < y \quad x \neq 0 \quad y \neq 0$$

Quantity A

$$\left(\frac{1}{x}\right)^2$$

Quantity B

$$\left(\frac{1}{y}\right)^2$$

- (A) (B) (C) (D)

2.

Quantity A

The area of a square with side a

Quantity B

The area of an equilateral triangle with side 2a

- (A) (B) (C) (D)

3.

Quantity A

$$\frac{52^2}{3^4} \div \frac{26^3}{9^2}$$

Quantity B

$$\frac{3}{13}$$

- (A) (B) (C) (D)

4.

x is a real number greater than 0

Quantity A

$$x$$

Quantity B

$$x^2$$

- (A) (B) (C) (D)

5.

$$y > 0$$

Quantity A

35% of  $y\%$  of 5

Quantity B

$y\%$  of 5% of 35

- (A)   (B)   (C)   (D)

6.

$$M = \{5, 10, 15, 20, 25\}$$

$$N = \{100, 105, 110, 115, 120\}$$

Quantity A

Standard deviation of set M

Quantity B

Standard deviation of set N

- (A)   (B)   (C)   (D)

7.

The owner of a local bakery wants to give his employees a raise and is considering two options: option 1 is to give each employee a \$9.00 per day increase. Option 2 is to give each employee a 10% increase. Data shows that before the increase the median daily pay is \$90.

Quantity A

The median daily salary of option 1

Quantity B

The median daily salary of option 2

- (A)   (B)   (C)   (D)

8.

Set A represents all odd numbers from 1 to 25 inclusive. Set B represents all prime numbers from 1 to 25.

Quantity A

Median of set A

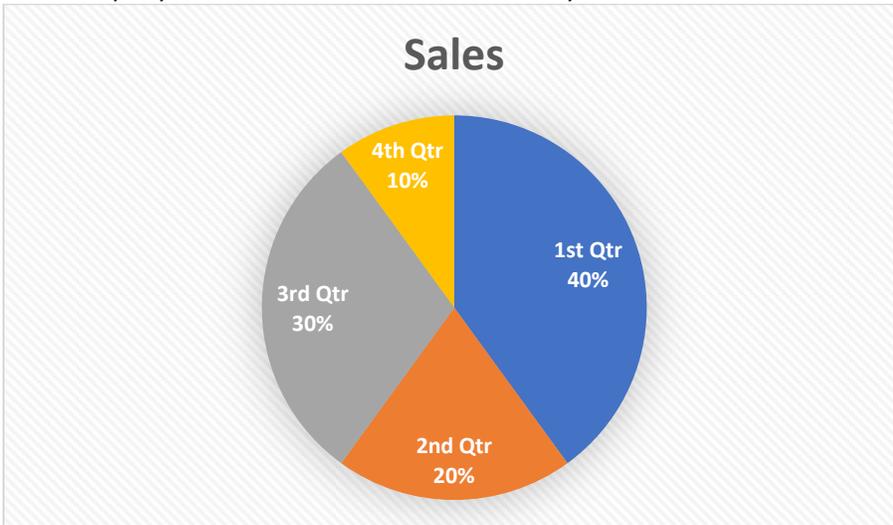
Quantity B

The interquartile range (IQR) of set B

- (A)   (B)   (C)   (D)

Questions 9 and 10 refer to the following pie chart.

The following pie chart shows the distribution of sales of a certain commodity X by company AB. The company sold \$30,000 worth of commodity X in the first and the fourth quarter.



9.

Quantity A

Total sales for the second Quarter

Quantity B

\$11,800

- (A) (B) (C) (D)

10.

Quantity A

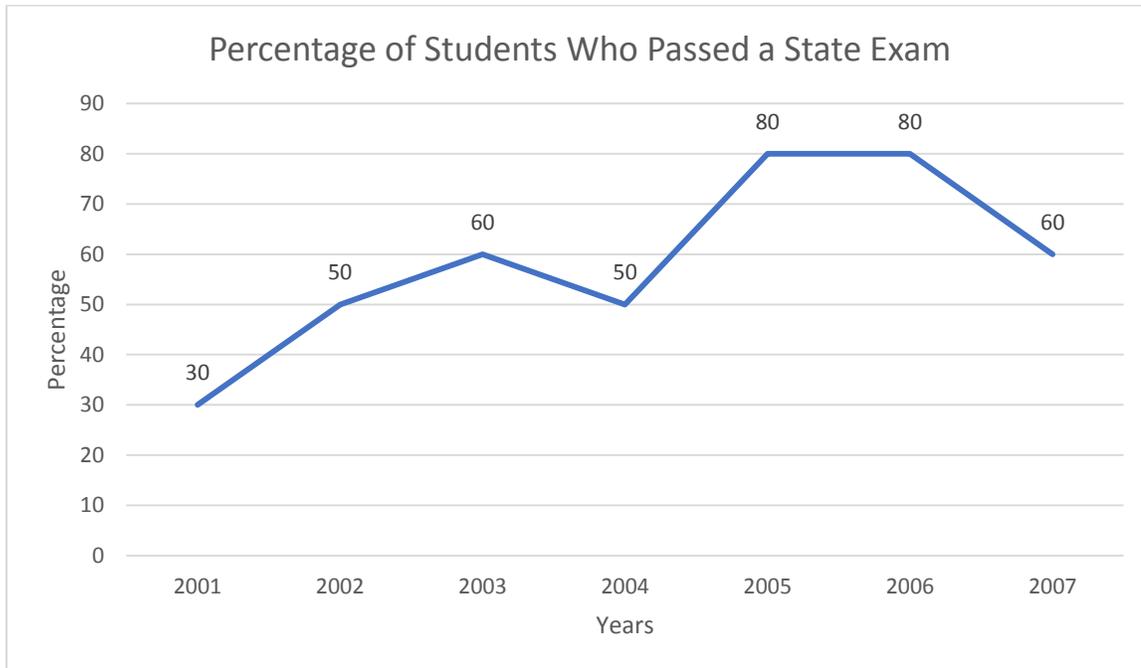
Percent decrease of sales from the First quarter to the third quarter

Quantity B

Percent decrease of sales from the second quarter to the fourth quarter

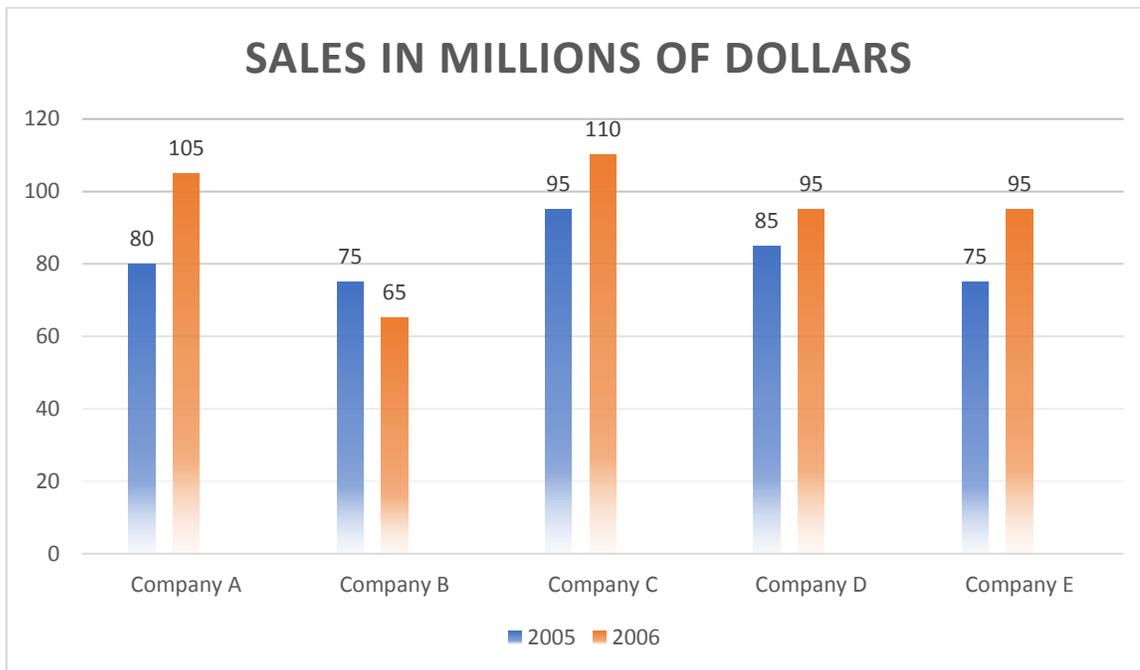
- (A) (B) (C) (D)

Questions 11 through 13 refer to the following graph



11. If the number of students who passed the exam in 2001 was 18,000, what was the number of students who took the exam?
- A. 55,000   B. 70,600   C. 36,000   D. 60,000   E. 72,000
12. During which 2 years was the number of students who passed the test the same?
- A. 2001-2002   B. 2002-2004   C. 2003-2004   D. 2005-2006   E. Not enough information.
13. If the total number of students who took the test in 2003 was 75,000, and the total number of the students who took the test in 2004 was 86,000, by approximately what percent did the number of students who failed the test increase or decrease from 2003 to 2004?
- A. 43.3% Increase   B. 23% decrease.   C. 18% decrease.   D. 13% increase.   E. 20% increase

Questions 14 through 17 refer to the following bar graph



14. What is the ratio of the total sales of company B for both years to the total sales of company D for both years?
- A. 3:2. B. 4:5. C. 7:9 D. 3:5 E. 2:3
15. The total sales of company B for both years is approximately what percent of the total sales of company C for both years?
- A. 30%. B. 45%. C. 75%. D. 68%. E. 80%
16. By what percent did the combined total sales of company B and company C approximately increase or decrease from 2005 to 2006.
- A. 5% increase. B. 4% decrease. C. 9.5% increase. D. 6% increase. E. 3% increase.

**In problems 17 to 20 you are given a question followed by two statements. For each problem, choose one of the following five conditions that is sufficient to answer the question:**

- A. Statement 1 ALONE is sufficient, but statement 2 alone is not sufficient  
B. Statement 2 ALONE is sufficient, but statement 1 alone is not sufficient  
C. BOTH Statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient  
D. EACH statement ALONE is sufficient  
E. Statements 1 and 2 TOGETHER are NOT sufficient.

17. David bought \$50 worth of gas for his truck. How far can David travel in his truck using this amount of gas?
1. The gas David bought costs \$2.50 a gallon
  2. David's truck gets 24 miles per gallon of gas

**18.** A rectangle has a perimeter of 96 inches. What are the dimensions of the rectangle?

1. The area is 572 square inches.
2. The width is 4 inches less than the length.

**19.** J, K, L, M, N are consecutive whole numbers. When is  $J \times K \times L > 12$ ?

1.  $J \geq 2$
2. J is odd

**20.**  $x^2 + y^2 = 100$ . What is the value of  $x + y$  ?

1.  $y > x$
2.  $y = 6$

## Solutions

### 1. D

Pick two numbers satisfying  $x < y$ , such as  $x = 2$  and  $y = 3$ . Then, for  $1/x^2$  and  $1/y^2$

We have  $\rightarrow \frac{1}{4} > \frac{1}{9}$ . However, if we choose the following values,  $x = -2$  and  $y = 2$ , the two expressions are equal:  $\frac{1}{4} = \frac{1}{4}$ . Since we have 2 contradicting statements, the answer is D

### 2. B

The area of a square is  $a^2$ . The area of an equilateral triangle with side  $s$  is given by:

$\frac{s^2\sqrt{3}}{4}$ . Substituting  $s = 2a$ , we get  $\frac{4a^2\sqrt{3}}{4} = a^2\sqrt{3}$ , which is larger than the area of a square.

### 3. B

**Simplifying the first expression we have:**  $\frac{52^2}{3^4} \div \frac{26^3}{9^2} = \frac{52 \cdot 52}{81} \cdot \frac{81}{26 \cdot 26 \cdot 26}$ . This reduces to:  $\frac{4}{26} = \frac{2}{13}$ , which is smaller than  $3/13$ . So the choice is B

### 4. D

We have three cases, depending on the value of  $x$ . If  $x$  is a real number greater than one, then  $x^2$  is larger than  $x$ . If  $x = 1$ , then  $x^2 = x$ . And if  $0 < x < 1$ , then  $x$  is larger than  $x^2$ . For example if,  $x = \frac{1}{2}$ , then  $x > x^2$ , as

we see in  $\frac{1}{2} > \frac{1}{4}$ . So, the expression cannot be determined.

### 5. C

The two quantities are equal. This can be seen when we expand each quantity, as follows:

Quantity A =  $\frac{35}{100} \cdot \frac{y}{100} \cdot 5$ . Quantity B =  $\frac{y}{100} \cdot \frac{5}{100} \cdot 35$

### 6. C

We answer this question by observation rather than by direct calculation. The two sets have the same range and, since the interval between the numbers in each set is uniformly 5, the elements have the same spread about the mean of each set. Therefore the standard deviation of each set of numbers is equal.

## 7. C

After a \$9.00 pay increase, the median daily salary of option 1 will be \$99.0. After a 10% increase, the median daily salary for option 2 will be the same:  $\$90 + \$9 = \$99.0$

## 8. B

$$A = \{1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25\}$$

$$B = \{2, 3, 5, 7, 11, 13, 17, 19, 23\}$$

The median (middle number) of set A is 13.

The interquartile range is given by:  $Q3 - Q1$  where  $Q1$  is the median of the lower 50% of the data and  $Q3$  is the median of the upper 50% of the data.

$$\text{The median of set B is 11. } Q1 \text{ is then } \left(\frac{3+5}{2}\right) = 4. \text{ } Q3 \text{ is } \left(\frac{17+19}{2}\right) = 18$$

The IQR for set B is then  $18 - 4 = 14$ , which is greater than the median of set A.

## 9. A

Total sales for the first and the fourth quarter represent 50% of the total sales. Therefore total sales for all four quarters is \$60,000, 50% of which is \$30,000. Total sales for the second quarter is 20% of \$60,000 which is  $0.2 \cdot 60,000 = \$12,000$ , which is greater than \$11,800

## 10. B

Total sales for the first quarter:  $0.4 \cdot 60,000 = \$24,000$ . Total sales for the third quarter:

$$0.3 \cdot 60,000 = \$18,000. \text{ The percent decrease is: } \left(\frac{24,000 - 18,000}{24,000}\right) \cdot 100 = 25\%$$

Total sales for the second quarter:  $0.2 \cdot 60,000 = \$12,000$ . Total sales for the fourth quarter:

$$0.1 \cdot 60,000 = \$6,000. \text{ The percent decrease is: } \left(\frac{12,000 - 6,000}{12,000}\right) \cdot 100 = 50\%$$

Thus, the percent decrease for the second quarter is greater than that of the third quarter.

## 11. D

$$18,000 = \frac{30}{100} \cdot x \text{ Solve for } x \text{ to get } 60,000$$

## 12. E

Since the total number of students who took the test is unknown, we can't determine the number of students who passed the test for any given year. Note that while choice **D** may seem correct, it is wrong. Even though the percentage of students who passed the test in 2005 and 2006 is the same, since the number of students who took the test in each of those years remains unknown, the number who passed the test in each case cannot be determined.

## Solutions

### 13. A

The total number of students who failed the state test in 2003 is:  $75,000 \cdot \frac{40}{100} = 30,000$

The total number of students who failed the state test in 2004 is:  $86,000 \cdot \frac{50}{100} = 43,000$

The percent increase is then:  $\frac{43,000 - 30,000}{30,000} \cdot 100 = \frac{13,000}{30,000} \cdot 100 = \frac{13}{30} \cdot 100 = 43.3\%$

Note that  $\frac{13}{30}$  is slightly less than 50%.

### 14. C

The total number of sales for company B in millions for both years is:  $65 + 75 = 140$ . The total number of sales of company D in millions both years is:  $85 + 95 = 180$ . The ratio is then:  $\frac{140}{180} = \frac{14}{18} = \frac{7}{9}$

### 15. D

Total number of sales for company B in millions in both years is:  $65 + 75 = 140$ . Total number of sales for company C in millions in both years is:  $95 + 110 = 205$ .

The question becomes 140 is what percent of 205?

$$140 = \frac{x}{100} \cdot 205 \rightarrow x = \frac{14,000}{205} = \frac{2800}{41} = 68\%$$

Or, more simply,  $140/205 \cdot 100\% = 68\%$

### 16. E

Total combined sales in millions for both companies in 2005 is:  $75 + 95 = 170$

Total combined sales in millions for both companies in 2006 is:  $65 + 110 = 175$

The percent increase is then:  $\frac{175 - 170}{170} \cdot 100 = \frac{5}{170} \cdot 100 = \frac{1}{34} \cdot 100 = 2.9\%$

**17. C**

In order to answer this question we need to know how many gallons of gas David bought, which we can determine from Statement 1. We also need to know how many miles per gallon his truck gets, which we can determine from Statement 2.

From Statement 1 we know that Dave bought  $\frac{50}{2.5} = 20$  gallons of gas.

From Statement 2 we calculate that Dave gets 24 miles per gallon.

Using both statements we determine that Dave can travel  $24 \cdot 20 = 480$  miles.

**18. D**

We are given the information that the perimeter of the rectangle is  $96 = 2L + 2W$ .

From statement 1 we know that:

$L \cdot W = 572$ . Since we have 2 independent equations with 2 unknowns we can solve for both L and W, the dimensions of the rectangle. So statement 1 is sufficient to solve the problem.

From statement 2 we know that  $W = L - 4$ . Again we have 2 independent equations and two unknowns, from which the dimensions of the rectangle can be calculated.

Therefore each statement alone is sufficient.

NOTE: you don't actually have to find the dimensions of the rectangle; just determine if you have enough information to do so.

**19. A**

From statement 1, if  $J = 2$  then  $2 \times 3 \times 4 = 24 > 12$ . Any other value of  $J$  greater than 2 will satisfy the condition. Statement 1 is sufficient.

From statement 2, if  $J = 1$  or  $J = 3$ , the condition is not satisfied, so statement 2 is not sufficient. The answer is choice A

**20. C**

Statement 1 is not sufficient to find the value of  $x + y$ . Statement 1 only tells us is that  $y > x$ , thus there is not enough information to determine a unique solution for x and y.

Statement 2 leads us to not one, but two solutions:  $x^2 + 36 = 100 \rightarrow x^2 = 64 \rightarrow x = \pm 8$ . So  $x$  could be +8 or -8. Since statement 1 tells us that  $y > x$ ,  $x = -8$ . Therefore:  $y = 6$  and  $x = -8$  and  $x + y = -2$