section 2

1. Quantity A: The greatest possible value of $\frac{2}{x-y}$ where $9 \leqslant x \leqslant 12$ and $-2 \leqslant y \leqslant 8$

Quantity B: 2

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

2. When the even integer n is divided by 7, the remainder is 3.

Quantity A: The remainder when n is divided by 14.

Quantity B: 10

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

3. $x<y<z$

Quantity A: $\frac{x+y+z}{3}$

Quantity B: y

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

4. n is a positive integer.

Quantity A: $\frac{1}{3^n}$

Quantity B: $3(\frac{1}{4^n})$

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

5. At a sale, the cost of each tie was reduced by 20 percent and the cost of each belt was reduced by 30 percent.

Quantity A: The percent reduction on the total cost of 1 tie and 2 belts

Quantity B: 25%

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

6. Quantity A: $m+n$

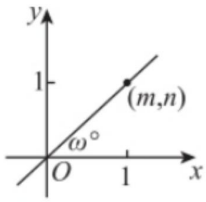
Quantity B: $2m$

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.



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7. A line in the xy-plane contains the points (5, 4) and (2, −1)

Quantity A: The slope of the line

Quantity B: 0

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

8. Points R, S, and T lie on a number line, where S is between R and T. The distance between R and S is 6, and the distance between R and T is 15.

Quantity A: The distance between the mid points of line segments RS and ST

Quantity B: The distance between S and T

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.

9. Each week a salesperson receives a commission that is equal to 12 percent of the first \$500 of sales plus 20 percent of additional sales. If the salesperson received a commission of \$380 last week, what was the total amount of the sales that the salesperson made last week?

A. \$1,600 B. \$1,660 C. \$1,860 D. \$2,000 E. \$2,100

10. Greg's weekly salary is $187, which is 15 percent less than Karla's weekly salary. If Karla's weekly salary increases by 10 percent, by what percent must Greg's weekly salary increase in order to equal Karla's new weekly salary? Give your answer to the nearest tenth of a percent.

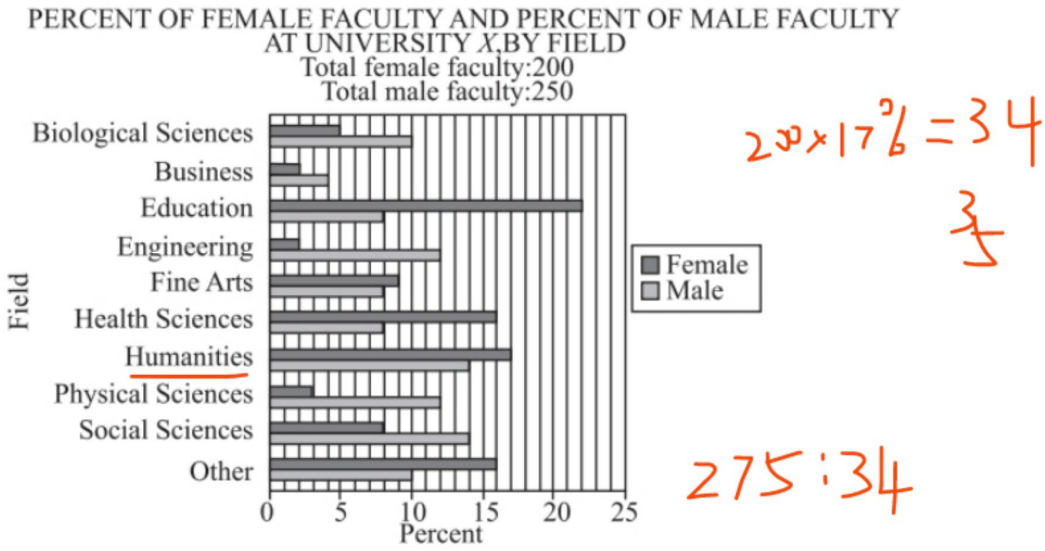
11. On his trip to the airport, Grant drove a total of 9 miles. His average speed on the trip was x miles per hour, where $30 \leqslant x \leqslant 35$. Which of the following could be the total number of minutes that Grant took to make the trip? Indicate all such numbers of minutes.

A. 15 B. 16 C. 17 D. 18 E. 19

12. If $x < y < 0$, which of the following inequalities must be true?

A. $y+1<x$ B. $y-1<x$ C. $xy^2<x$ D. $xy<y^2$ E. $xy<x^2$

Questions 13–15 are based on the following data.



13. There are 275 students in the field of engineering at University X. Approximately what is the ratio of the number of students in engineering to the number of faculty in engineering?

A. 8 to 1 B. 10 to 1 C. 12 to 1 D. 14 to 1 E. 20 to 1

14. Approximately what percent of the faculty in humanities are male?

A. 35% B. 38% C. 41% D. 45% E. 51%

15. For the biological sciences and health sciences faculty combined, $\frac{1}{3}$ of the female and $\frac{2}{9}$ of the male faculty members are tenured professors. What fraction of all the faculty members in those two fields combined are tenured professors?

Give your answer as a fraction.

16. Of the 20 lightbulbs in a box, 2 are defective. An inspector will select 2 lightbulbs simultaneously and at random from the box. What is the probability that neither of the lightbulbs selected will be defective?

Give your answer as a fraction.

17.

The figure above shows the standard normal distribution, with mean 0 and standard deviation 1, including approximate percents of the distribution corresponding to the six regions shown. The random variable Y is normally distributed with a mean of 470, and the value Y = 340 is at the 15th percentile of the distribution. Of the following, which is the best estimate of the standard deviation of the distribution?

A. 125 B. 135 C. 145 D. 155 E. 165

18. Three different committees consist of 8, 10, and 13 people, respectively. If N is the total number of different people in the 3 committees combined, what is the least possible value of N?

A. 13 B. 15 C. 21 D. 24 E. 31

19. The range of the heights of the female students in a certain class is 13.2 inches, and the range of the heights of the male students in the class is 15.4 inches. Which of the following statements individually provide(s) sufficient additional information to determine the range of the heights of all the students in the class?

Indicate all such statements.

A. The tallest male student in the class is 5.8 inches taller than the tallest female student in the class.

B. The median height of the male students in the class is 1.1 inches greater than the median height of the female students in the class.

C. The average (arithmetic mean) height of the male students in the class is 4.6 inches greater than the average height of the female students in the class.

20. How many integers from 1 to 900 inclusive have exactly 3 positive divisors?

A. 10 B. 14 C. 15 D. 29 E. 30