

- 1) Which choice is a translation of the phrase ‘half of the sum of two and a number’? Let  $x$  represent the number.

A  $\frac{1}{2}(2+x)$

B  $\frac{1}{2} \cdot 2 + x$

C  $\frac{1}{2}(2x)$

D  $\frac{1}{2} + (2+x)$

E  $2 + \frac{1}{2}x$

- 2) Which of the following would be the same as the following set?  
 $\{0, 1, 2, 3, 4, 5, 6\}$

A  $\{x \mid x \text{ is a natural number less than } 7\}$

B  $\{x \mid x \text{ is a whole number less than } 7\}$

C  $\{x \mid x \text{ is an real number between } 0 \text{ and } 7\}$

D  $\{x \mid x \text{ is a real number less than or equal to } 6\}$

E  $\{x \mid x \text{ is a rational number between } -1 \text{ and } 7\}$

- 3) Evaluate using the rules for the order of operations. Give answer in simplest form.

$$\frac{4^2 + 3(12 - 8)^2}{3(4 - 1) - 1}$$

A  $\frac{32}{5}$

B 8

C 4

D 38

E 11

- 4) Solve this equation.  $\frac{1}{3}(3x - 5) = 3x - 2$
- A  $x = -\frac{3}{2}$
- B  $x = -\frac{11}{6}$
- C  $x = \frac{11}{6}$
- D  $x = -\frac{1}{2}$
- E  $x = \frac{1}{6}$
- 5) Three **consecutive positive odd integers** are such that the sum of the middle and twice the largest is the same as twelve less than 5 times the smallest. What is true about the **middle or second** of these consecutive odd integers?
- A It is between 2 and 12
- B It is between 12 and 20.
- C It is between 20 and 32.
- D It is between 32 and 44.
- E It is greater than 44.
- 6) A catalog discount warehouse sells all winter jackets at a mark-up of 75% over wholesale cost plus a processing/shipping fee of \$8.25. If Robert orders a jacket and is billed \$150, which equation could be used to find the wholesale price of the jacket? Let  $x$  = the wholesale cost of the jacket.
- A  $x + 0.75x + 8.25 = 150$
- B  $0.75x + 8.25 = 150$
- C  $150 + 0.75x + 8.25 = x$
- D  $x = 0.75(150) + 8.25$
- E  $x + 0.75x = 150 + 8.25$

- 7) Solve the following physics formula for  $m$ .  $F = \frac{mv^2}{r}$

A  $m = Fr - v^2$

B  $m = \frac{F + r}{v^2}$

C  $m = \frac{Fv^2}{r}$

D  $m = \frac{F - r}{v^2}$

E  $m = \frac{Fr}{v^2}$

- 8) A small backyard is in the shape of a trapezoid with an area of 95 square feet. The two parallel bases or sides,  $b_1$  and  $b_2$ , measure 8 feet and 12 feet. What is the height ( $h$ ) between the bases? Hint: The area of a trapezoid is given by

$A = \frac{h}{2}(b_1 + b_2)$ . Round your answer to the nearest tenth of a foot, if necessary.

A 2.4 feet

B 9.5 feet

C 8.8 feet

D 6.7 feet

E 11.5 feet

- 9) Simplify. Write answer without zero or negative exponents.  $\left(\frac{2k^0x^{-3}}{3k^{-1}x^4}\right)^{-3}$

A  $\frac{27x^{21}}{8k^3}$

B  $\frac{27x^3}{8k^3}$

C  $\frac{3x^{21}}{2k^3}$

D  $\frac{9x^{11}}{8k^4}$

E  $\frac{27x^{10}}{8k^3}$

- 10) In 1990 the national health care expenditure, according to the U.S. Centers for Medicare and Medicaid Services, was approximately \$690,000,000,000. Suppose by 2005, it was 2.3 times what it was in 1990. Approximate the expenditure for national health care in 2005? Write your answer using scientific notation (to the correct number of significant digits).

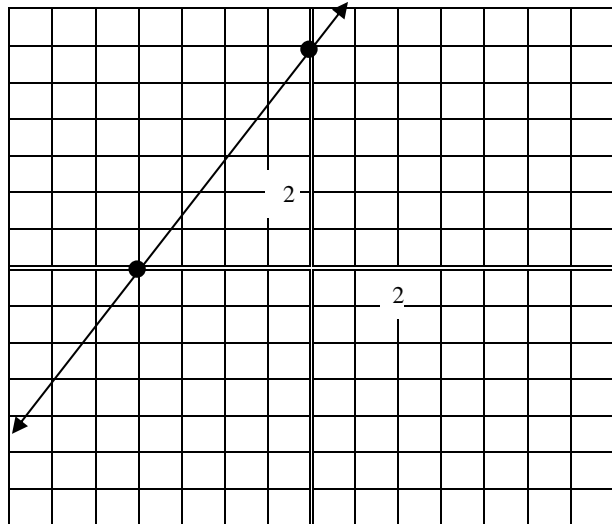
- A  $\$1.6 \times 10^{11}$
- B  $\$1.6 \times 10^{12}$
- C  $\$1.6 \times 10^{10}$
- D  $\$1.5 \times 10^{12}$
- E  $\$1.5 \times 10^{11}$

- 11) The ordered pair  $(x, y)$ , where  $x$  is the solution of the equation  $x = -3x - 3.6$  and  $y$  is the solution of the equation  $\frac{3}{2}y = -4$ , would be found in which quadrant?

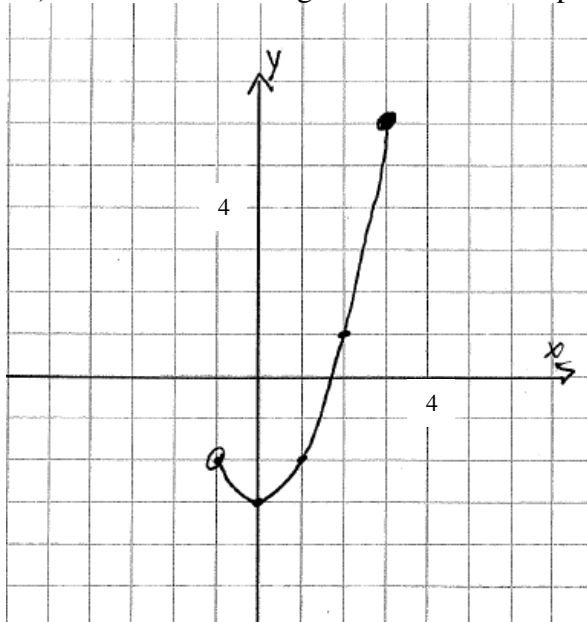
- A I
- B II
- C III
- D IV
- E None. The ordered pair is on an axis.

- 12) Which equation matches the line graphed?

- A  $3x - 2y = 12$
- B  $2x - 3y = 12$
- C  $2x - 3y = -12$
- D  $3x + 2y = -12$
- E  $3x - 2y = -12$



- 13) What is the range of the function represented below?



- A  $[-3, 6]$   
 B  $(-1, 3]$   
 C  $(-1, 6)$   
 D  $(-1, 3)$   
 E  $(-2, 6]$
- 14) Find  $g(3k)$  if  $g(x) = 2x^2 + 3x$ .

- A  $12k^2 + 9k$   
 B  $18k^2 + 9k$   
 C  $6k^2 + 3k$   
 D  $18k^2 + 3k$   
 E None of the above.

- 15) Which statement is true?

- A  $(2m^2)(3m) = 6m^2$   
 B  $4(a + 2) + (6a + 4) = 10a + 8$   
 C Every rational number is a whole number.  
 D  $0.000042 = 4.2 \times 10^5$   
 E The point represented by  $(-2, 0)$  would be on the  $x$ -axis.