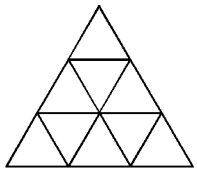
APLUS Learning Center - Mathworkshop

Name _____

Math Contest Practice - Algebra 1 - No.3

ID # _____ Date _____

1. How many triangles are shown in the figure?

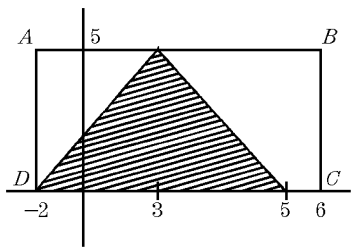


2. Let $\begin{bmatrix} 3 & 5 \\ -7 & 6 \end{bmatrix} + \begin{bmatrix} w & x \\ y & z \end{bmatrix} = \begin{bmatrix} -1 & 4 \\ 3 & 2 \end{bmatrix}$. Find $w + x + y + z$.

3. The symbol, $n[A]$ reads the "number of elements in set A." (A) tells us how many elements below to set described by A. For example, if $A = \{1, 2, 3, 4, 5, 7, 8, 10, 11\}$ then $n[A] = 9$. What is the value of $n[B]$ if $B = [a, 4, 7, 10, \ldots, 100]$?

4. Barb has 3 pairs of shorts, 5 T-shirts, and two pairs of athletic shoes. How many different outfits can Barb wear to go play basketball?

5. What fraction of rectangle $ABCD$ is shaded?



6. Find the smallest 5 digit number that has factors of 11, 13, and 17.

7. Using the integers from 10 to 50 how many of the prime numbers will form new primes if their digits are reversed?

8. Ping Pong balls numbered 1 to 50 are put in a bag. If a ball is pulled out at random what's the probability that the number on the ball is divisible by 2, 3 or 5?

9. If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$ then $A \cup B$ (read "A union B") $= \{1, 2, 3, 4, 5\}$ and $A \cap B$ (read "A intersection B") $= \{3\}$. What is the set described by

$$\{2, 4, 6, 8\} \cap \{6, 8, 10, 12, 14\}?$$

10. How many ordered pairs (x, y), where x and y are both whole numbers, will satisfy $3x + 5y = 30$?

11. The surface area of a sphere is $A = 4\pi r^2$. If $AB = 20$ then what is the surface area of the sphere?