

- 10.** If  $x > 1$ , then which of the following has the LEAST value?
- F.**  $\sqrt{x}$   
**G.**  $\sqrt{2x}$   
**H.**  $\sqrt{x \cdot x}$   
**J.**  $x\sqrt{x}$   
**K.**  $x \cdot x$

**48.** Which of the following expressions has a positive value for all  $x$  and  $y$  such that  $x > 0$  and  $y < 0$  ?

**F.**  $y - x$

**G.**  $x + y$

**H.**  $x^3y$

**J.**  $\frac{x^2}{y}$

**K.**  $\frac{x}{y^2}$

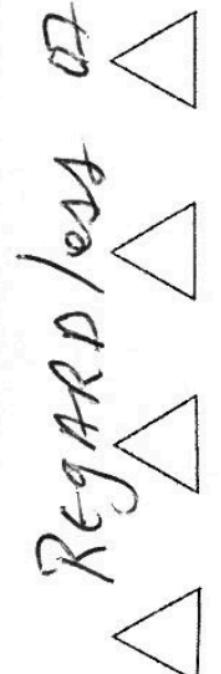
**55.** If  $x$  and  $y$  are real numbers such that  $x > 1$  and  $y < -1$ , then which of the following inequalities *must* be true?

- A.**  $\frac{x}{y} > 1$
- B.**  $|x|^2 > |y|$
- C.**  $\frac{x}{3} - 5 > \frac{y}{3} - 5$
- D.**  $x^2 + 1 > y^2 + 1$
- E.**  $x^{-2} > y^{-2}$

... or

52. Which of the following is true for all consecutive integers  $m$  and  $n$  such that  $m < n$ ?
- F.  $m$  is odd
  - G.  $n$  is odd
  - H.  $n - m$  is even
  - J.  $n^2 - m^2$  is odd
  - K.  $m^2 + n^2$  is even

- 53.** For real numbers  $a$  and  $b$ , when is the equation  $|a + b| = |a - b|$  true?
- A. Always
  - B. Only when  $a = b$
  - C. Only when  $a = 0$  and  $b = 0$
  - D. Only when  $a = 0$  or  $b = 0$
  - E. Never

**2**  Regarding least or sign, what would product 2  
the biggest number 2  
Take the extreme of  
both.  $| -4 - 2(5) | =$   
 $| -4 - 10 | = 14$

54. If  $2 \leq x \leq 5$  and  $-4 \leq y \leq -3$ , what is the maximum value of  $|y - 2x|$ ?

- G.  $\rightarrow$  20  
H. 14  
J. 8  
K. 7

24. For nonzero numbers  $x$  and  $y$ , which of the following expressions is NOT equivalent to  $\frac{-x}{y}$ ?

Questions require you to test each one

F.  $\frac{-x}{-y} \rightarrow = \frac{-1(x)}{-1(y)}$

G.  $\frac{x}{-y}$

H.  $-\frac{x}{y}$

J.  $\frac{-\pi x}{\pi y}$

K.  $-\frac{1}{\frac{y}{x}} \rightarrow = -1\left(\frac{x}{y}\right) = \frac{x}{-y} = -1\left(\frac{x}{y}\right) = \frac{-1(x)}{-1(y)} = \frac{x}{-y}$

Reciprocal

9. If  $a > 0$  and  $b < 0$ , then the sum of  $a$  and  $b$ :
- A. is always positive.
  - B. is always negative.
  - C. is always zero.
  - D. cannot be zero, but can be any other real number.
  - E. can be any real number.

24. In the equation  $m = \frac{3}{1+q}$ ,  $q$  represents a positive integer. As  $q$  gets larger and larger without bound, the value of  $m$ :
- F. gets closer and closer to 0.
  - G. gets closer and closer to 1.
  - H. gets closer and closer to 3.
  - J. remains constant.
  - K. gets larger and larger.

## INTÉGERS are the whole numbers

5. For integers  $a$  and  $b$  such that  $ab = 8$ , which of the following is NOT a possible value of  $a$ ?

- A. 2  
B. 1  
C. -4  
D. -6  
E. -8
- $\rightarrow$  b is an integer  
Solve for  $b$  and set where a does not  
divide an integer for  $b$ .  $b = \frac{8}{a}$

43. If the product of 5 integers is positive, at least how many of these 5 integers *must* be positive?
- A. 1  
B. 2  
C. 3  
D. 4  
E. 5
44. If the product of 4 of the integers could be negative and one could still end up with a positive number.

## INEQUALITIES

60. When  $-3 \leq x \leq 4$  and  $-1 \leq y \leq 2$ , what is the least possible value for  $x - y$ ?

DO YOUR FIGURING HERE.

- F. -5  
G. -3  
H. -2  
J. 3  
K. 5

You can start with the smallest value and work backward

END OF TEST 2

STOP! DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

DO NOT RETURN TO THE PREVIOUS TEST.

-5 would work with  
 $x - y$

$-3 - 2$  and yes  $-3 - 2 = -5$

The least  $x$  is -3  
and the greatest  $y$  is 2

$$-3 - 2 = -5$$

**2.** What is the smallest possible product for two integers whose sum is 26?

f. 25

g. 15

h. 154

i. 144

j. 26

**46.** If  $a < b$ , then  $|a - b|$  is equivalent to which of the following?

- F.**  $a + b$
- G.**  $-(a + b)$
- H.**  $\sqrt{a - b}$
- J.**  $a - b$
- K.**  $-(a - b)$