

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. $x^{-2} > y^{-2}$

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

20. For all positive integers x , what is the greatest common factor of the 2 numbers $216x$ and $180x$?

F. 6

G. 72

H. x

J. $12x$

K. $36x$

51. An integer from 100 through 999, inclusive, is to be chosen at random. What is the probability that the number chosen will have 0 as at least 1 digit?


A. $\frac{19}{900}$

B. $\frac{81}{900}$

C. $\frac{90}{900}$

D. $\frac{171}{900}$

E. $\frac{271}{1,000}$



16. What is the least common multiple of 70, 60, and 50 ?

F. 60

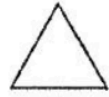
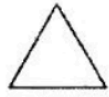
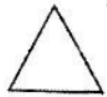
G. 180

H. 210

J. 2,100

K. 210,000

2



REGARDLESS OF SIGN, what would produce

The biggest number 2

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

Take the extreme of both.

$$|-4 - 2(5)| =$$

$$|-4 - 10| = 14$$

largest $x \rightarrow 5$
largest $y \rightarrow |-4| = 4$

- F. 20
- G. 14
- H. 13
- J. 8
- K. 7

4. How many integers between 9 and 59 can be divided by 5 with a remainder of zero?

- F. 9
G. 10
H. 11
J. 12
K. 13

Easiest way is just
to list those multiples of 5
between 9 and 59 and then
count them

10, 15, 20, 25, 30, 35, 40, 45, 50, 55
There are ten of them

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

"Which of the following"

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. $-\frac{1}{\frac{y}{x}}$

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

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.

INTEGERS are the whole numbers that are + or -.

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

b is an integer

Solve for b and
Divide an integer for b .

see where a does NOT
 $b = \frac{8}{a}$

25. What is the smallest number greater than 1 that, when divided by 2, 3, 4, 5, or 6, leaves a remainder of 1 in each case?

- A. 7
- B. 31
- C. 61
- D. 121
- E. 721

*you know this one isn't it
4 doesn't work*

Calculator Fun

*with 61 all remainder
have ONE*

60 seconds is used because 60 has all those-

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

4 of the integers could be negative and one positive and you 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.

You can start with the smallest value and work backward

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

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 you $-3 - 2 = -5$

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

$$-3 - 2 = -5$$

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

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H. x^3y

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

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

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

f. 25

g. 15

h. 154

i. 144

j. 26

absolute value

15. What is the greatest prime factor of 520?

- A. 5
- B. 7
- C. 11
- D. 13
- E. 17

example of
working from
choices

START with Largest Number
and work to smallest. Question
asks for greatest. 17 is NOT a
factor, but 13 is

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- B. 2
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- D. 4
- E. 5

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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. $x \cdot x$

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. $-(a - b)$

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

F. 20

G. 14

H. 13

J. 8

K. 7