49. Which expression is equivalent to $x^6 x^2$? $= x^8$

    A. $x^4 x^3$ C. $x^7 x^3$

    B. $x^5 x^3 = x^8$ D. $x^9 x^3$

Note: We add exponents when we multiply with like bases.

50. Which number does <u>not</u> have a reciprocal?

    A. -1   C. $\dfrac{1}{1000}$

    B. 0   D. 3

Because we can't divide by zero.
Let's just say we wrote zero
as: $\dfrac{0}{3}$ Flip it and you get $\dfrac{3}{0}$

undefined

51. What is the multiplicative inverse of ½?

A. -2 C. $\frac{1}{2}$

B. $-\frac{1}{2}$ D. 2

$$\frac{1}{2} \cdot \frac{2}{1} = 1$$

Note: If the product is 1 when you multiply the two values together, then they are multiplicative inverses (as well as reciprocals).

52. What is the solution for this equation?
$$|2x - 3| = 5$$

A. $x = -4$ or $x = 4$

B. $x = -4$ or $x = 3$

C. $x = -1$ or $x = 4$

D. $x = -1$ or $x = 3$

The value inside the absolute value bars must be 5, so:

$$2x - 3 = 5 \qquad \text{or} \qquad 2x - 3 = -5$$
$$+3 \quad +3 \qquad\qquad +3 \quad +3$$
$$\frac{2x = 8}{2} \qquad\qquad \frac{2x = -2}{2}$$
$$x = 4 \quad \text{or} \qquad\qquad x = -1$$

53. What is the solution set of the inequality
$$5 - |x + 4| \le -3?$$

Isolate.

A. $-2 \le x \le 6$

B. $x \le -2$ or $x \ge 6$

C. $-12 \le x \le 4$

D. $x \le -12$ or $x \ge 4$ ⟵ *(circled)*

→ Big Switch
$$|x+4| \ge 8$$

$x+4 \ge 8$ or $x+4 \le -8$
$\quad -4 \ -4 \qquad -4 \ -4$
$x \ge 4$ or $x \le -12$

(number line with points at −12 and 4)
−12   4

$5 - |x+4| \le -3$
$-5 \qquad\qquad -5$
$-|x+4| \le -8$
$\overline{-1} \qquad \overline{-1}$

---

54. Which equation is equivalent to
$$5x - 2(7x + 1) = 14x?$$

Dist.

A. $-9x - 2 = 14x$ *(circled)*

B. $-9x + 1 = 14x$

C. $-9x + 2 = 14x$

D. $12x - 1 = 14x$

$5x - 14x - 2 = 14x$

$-9x - 2 = 14x$

55. Which equation is equivalent to
$4(2 - 5x) = 6 - 3(1 - 3x)$?

A. $8x = 5$

B. $8x = 17$

C. $29x = 5$

D. $29x = 17$

$8 - 20x = 6 - 3 + 9x$

$+20x \qquad +20x$

$8 = 3 + 29x$

$-3 \quad -3$

$5 = 29x$

Same as choice C
by applying Symmetric
Prop. Eq.

56. The total cost (c) in dollars of renting a
sailboat for n days is given by the equation

$$c = 120 + 60n$$

If the total cost was $360, for how many
days was the sailboat rented?

A. 2

C. 6

B. 4

D. 8

$360 = 120 + 60n$

$-120 \quad -120$

$240 = 60n$

$\dfrac{240}{60} = \dfrac{60n}{60}$

$n = 4 \text{ days}$

57. Solve: $3(x + 5) = 2x + 35$

Step 1: $3x + 15 = 2x + 35$
Step 2: $x + 15 = 35$
Step 3: $5x = 20$
Step 4: $x = 4$

Which is the first <u>incorrect</u> step in the solution shown above?

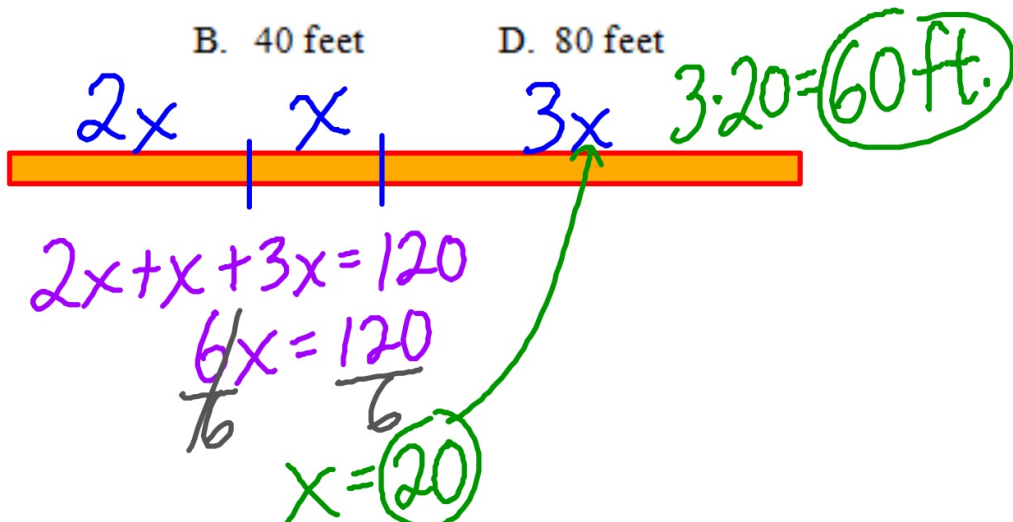A. Step 1   C. Step 3

B. Step 2   D. Step 4

58. A 120-foot-long rope is cut into 3 pieces. The first piece of rope is twice as long as the second piece of rope. The third piece of rope is three times as long as the second piece of rope. What is the length of the longest piece of rope?

A. 20 feet   C. 60 feet

B. 40 feet   D. 80 feet

$2x + x + 3x = 120$
$6x = 120$
$\frac{6x}{6} = \frac{120}{6}$
$x = 20$

$3 \cdot 20 = 60 \text{ ft.}$

59. The cost to rent a construction crane is $750 per day plus $250 per hour for use. What is the maximum number of hours the crane can be used each day if the rental cost is not to exceed $2500 per day?

A. 2.5

C. 7.0

B. 3.7

D. 13.0

*so 7 is the max.

Cost for the 1 day

Let h = #hrs. rented

$$750 + 250h \leq 2500$$
$$-750 \qquad\qquad -750$$
$$250h \leq 1750$$
$$\frac{250h}{250} \leq \frac{1750}{250}$$
$$h \leq 7$$

60. What is the solution to the inequality $x - 5 > 14$?

$$+5 \quad +5$$
$$x > 19$$

A. $x > 9$

C. $x > 19$
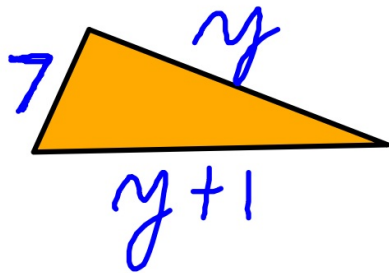
B. $x < 9$

D. $x < 19$

61. The lengths of the sides of a triangle are y, $y + 1$, and 7 centimeters. If the perimeter is 56 centimeters, what is the value of y?

(A.) 24

C. 31

B. 25

D. 25

$$per. = y + y + 1 + 7$$
$$56 = 2y + 8$$
$$\underline{-8} \qquad \underline{-8}$$
$$\frac{48}{2} = \frac{2y}{2}$$
$$\boxed{24 = y}$$

62. Which number serves as a counterexample to this statement below?

| All positive integers are divisible by 2 or 3. |

A. 100

C. 30

B. 57

(D) 25

$$\frac{25}{2} = 12\frac{1}{2} \qquad \frac{25}{3} = 8\frac{1}{3}$$

Neither result is an integer, so 25 is not divisible by 2 or 3.

63. What is the conclusion of the statement in the box below?

hypothesis *Conclusion*

If $x^2 = 4$, then $x = -2$ or $x = 2$.

A. $x^2 = 4$

C. $x = -2$

B. $x = 2$

D. $x = -2$ or $x = 2$

64. Which of the following is a valid conclusion to the statement "If a student is a high school band member, then the student is a good musician"?

A. All good musicians are high school band members.

B. A student is a high school band member.

C. All students are good musicians.

D. All high school band members are good musicians.