Name __Key__   Hour_____

1. A coffee shop sells a ceramic refill mug for $8.95. Each refill costs $1.50. Last month Rose spent $26.95 on a mug and refills. How many refills did she buy?

   variable: _____ x = the number of refills _____

   Equation: Solution: __12 refills__

   $$1.50x + 8.95 = 26.95$$
   $$\; -8.95 \quad -8.95$$
   $$\overline{}$$
   $$\frac{1.50x}{1.50} = \frac{18.00}{1.50} \qquad x = 12$$

2. Brandon follows a 2,800 calorie-per-day diet. He has 11 servings of breads and cereals, which average 140 calories each. Yesterday, he had a combined 9 servings of fruits and vegetables, averaging 60 calories each. How many 180-calorie servings of meat and milk did he have to complete his diet?

   variable: _____ x = the number of servings _____

   Equation: Solution: __4 servings__

   $$140(11) + 9(60) + 180x = 2,800$$
   $$1540 + 540 + 180x = 2,800$$
   $$2,080 + 180x = 2,800$$
   $$-2080 \qquad\qquad -2080$$
   $$\overline{}$$
   $$\frac{180x}{180} = \frac{720}{180} \qquad x = 4$$

3. A long-distance phone company charges $1.01 for the first 25 minutes of a call, and then $0.09 for each additional minute. A call costs $9.56. How long did it last?

   variable: _____ x = the number of minutes _____

   Equation: Solution: __120 min__

   $$1.01 + .09x = 9.56$$
   $$-1.01 \qquad\qquad -1.01$$
   $$\overline{}$$
   $$\frac{.09x}{.09} = \frac{8.55}{.09} \qquad x = 95$$

   $$\begin{array}{r} 95 \\ +25 \;(\text{first min}) \\ \hline 120 \end{array}$$

4. Marina bought 4 books. Jose' bought half as many books as Ben bought. Together, the 3 friends bought 13 books. How many books did Ben buy?

   variable: _____ x = the number of books _____

   Equation: Solution: __6 books__

   $$\tfrac{1}{2}x + 4 + x = 13$$
   $$1\tfrac{1}{2}x + 4 = 13$$
   $$-4 \quad -4$$
   $$\overline{}$$
   $$\frac{1.5x}{1.5} = \frac{9}{1.5} \qquad x = 6$$

5. The area of a pentagon increased by 27 is the same as four times the area of the pentagon, minus 15. What is the area of the pentagon?

variable: _____ $x =$ the area of the pentagon

Equation: Solution: _____ 14

$$x + 27 = 4x - 15$$
$$-x \qquad\quad -x$$
$$\overline{\qquad\qquad\qquad}$$
$$27 = 3x - 15 \qquad x = 14$$
$$+15 \qquad\quad +15$$
$$\overline{\qquad\qquad\qquad}$$
$$42 = 3x$$

6. John is twice as old as Helen. Subtracting 4 from John's age and then dividing by 2 gives William's age. If William is 24, how old is Helen?

variable: _____ $x =$ Helen's age

Equation: Solution: _____ 26 years old

$$2 \cdot \frac{2x - 4}{2} = 24 \cdot 2$$
$$2x - 4 = 48$$
$$+4 \qquad +4$$
$$\overline{\qquad\qquad\qquad} \qquad x = 26$$
$$2x = 52$$

7. For a field trip, 4 students rode in cars and the rest filled nine buses. How many students were in each bus if 472 students were on the trip?

variable: _____ $x =$ the number of students in each bus

Equation: Solution: _____ 52 students

$$4 + 9x = 472$$
$$-4 \qquad\quad -4$$
$$\overline{\qquad\qquad\qquad}$$
$$\frac{9x}{9} = \frac{468}{9} \qquad x = 52$$

8. How old am I if 400 reduced by 2 times my age is 244?

variable: _____ $x =$ my age

Equation: Solution: _____ 78 years old

$$400 - 2x = 244$$
$$-400 \qquad\qquad -400$$
$$\overline{\qquad\qquad\qquad}$$
$$\frac{-2x}{-2} = \frac{-156}{-2}$$