1)   Solve the inequality below. Write the solution using interval notation.

$$-3(x+4)+2 \geq 7-x$$

A $\left(-\infty, \frac{7}{2}\right]$

B $\left[-\frac{17}{2}, \infty\right)$

C $\left(-\infty, \frac{17}{2}\right]$

D $\left(\frac{7}{2}, \infty\right)$

E $\left(-\infty, -\frac{17}{2}\right]$

2)   Solve $|2x-16|-22=-6$ Which statement describes the solution(s)?

A   There is no solution.

B   There are two solutions; one positive, the other zero.

C   There is only one solution; it is positive.

D   There are two positive solutions.

E   There is only one solution; it is zero.

3)   Let $f(x)=\left|\frac{1}{2}x-4\right|$. Find all values for which $f(x) \leq 5$.

A $\{x|-2 \leq x \leq 18\}$

B $\{x|-\frac{1}{2} \leq x \leq \frac{9}{2}\}$

C $\{x|-1 \leq x \leq 9\}$

D $\{x|x \leq -2 \text{ or } x \geq 18\}$

E $\{x|x \leq -\frac{1}{2} \text{ or } x \geq \frac{9}{2}\}$

4) Subtract: $(-6m^2 - 8m + 5) - (7m - 5m^2 - 8)$

      A $-m^2 - 15m - 3$

      B $-m^2 - 15m + 13$

      C $-11m^2 - 15m - 3$

      D $-11m^2 - m - 3$

      E   None of the above.

5) Which of the following is(are) **false**?

I	$(a^3b^2 - 11)(a^3b^2 + 11) = a^9b^4 - 121$
II	$(mn + 3y)^2 = m^2n^2 + 9y^2$
III	$\left(r + \frac{1}{2}\right)(2r - 4) = 2r^2 - 3r - 2$

      A   All are false.

      B   II only

      C   I and II only

      D   I only

      E   II and III only

6) Which is one factor of $6ax + a + 12bx + 2b$?

      A $(a - 2b)$

      B $(6x - 1)$

      C $(a + 1)$

      D $(6x - b)$

      E $(6x + 1)$

7) Which is one of the factors of $20x^2 - 7x - 6$?

    A $(5x - 2)$

    B $(4x - 3)$

    C $(5x + 3)$

    D $(4x + 3)$

    E $(x + 2)$

8) Factor **completely**: $27x^3 y - 300xy$

    A $3xy(3x - 10)^2$

    B $3x(9x^2 y - 100y)$

    C $3xy(3x + 10)^2$

    D $3xy(3x + 10)(3x - 10)$

    E $xy(27x^2 - 300)$

9) Solve $2x^2 - 3 = -x$. **One** solution is:

    A $x = -\frac{3}{2}$

    B $x = -1$

    C $x = -\frac{2}{3}$

    D $x = \frac{3}{2}$

    E $x = 3$

10)   A garden has an area of 60 square feet. Its length is 4 feet more than its width. What
       statement is true about its **length?**

       A   The length of the garden is less than 5 feet.
       B   The length of the garden is between 5 and 8 feet.
       C   The length of the garden is between 8 and 11 feet.
       D   The length of the garden is between 11 and 14 feet.
       E   The length of the garden is more than 14 feet.

11)   Multiply: $\dfrac{a^2 + ab + 2a + 2b}{a^2 + 4a + 4} \cdot \dfrac{a^2 + 2a}{a^2 - b^2}$ Write answer in simplest form.

       Hint: For the first numerator, factor by grouping by pairs.

       A $\dfrac{a}{a-b}$

       B $\dfrac{a(ab + 2a + 2b)}{-2b^2(a+1)}$

       C $\dfrac{a+b}{(a-b)^2}$

       D $\dfrac{(a+b)(a^2 + 2a)}{(a+2)(a-b)}$

       E $\dfrac{a-2}{a-b}$

12)   Subtract: $\dfrac{2}{y} - \dfrac{1}{y+4}$ Simplify, if possible.

       A $\dfrac{1}{y(y+4)}$

       B $\dfrac{8}{y+4}$

       C $\dfrac{y+8}{y(y+4)}$

       D $\dfrac{7}{y+4}$

       E $\dfrac{1}{y}$

13)   Which statement describes the solution of the equation?

$$\frac{25}{y-2} - \frac{8}{y} = \frac{15}{y}$$

    A   The solution is less than -20.

    B   The solution is between -20 and -10.

    C   The solution is between -10 and 5.

    D   The solution is between 5 and 15.

    E   The solution is greater than 15.

14)   Alone it takes Mike 4 **more** hours than Randy to split a cord of wood. Randy can split a cord of wood in **2 hours alone**. How long would it take them together to split a cord of wood?

    A   1 hour

    B $1\frac{2}{3}$ hours

    C $1\frac{1}{3}$ hours

    D $\frac{1}{2}$ hour

    E $1\frac{1}{2}$ hours

15)   The value of *y* varies inversely as the value of *x*. The value of *y* is 5 when *x* = 2. Find the equation of variation and find the value of *y* when *x* is 3.

    A $y = \frac{5}{2x}, \quad y = \frac{5}{6}$

    B $y = \frac{5}{2}x, \quad y = \frac{15}{2}$

    C $y = \frac{10}{x}, \quad y = \frac{10}{3}$

    D $y = 10x, \quad y = 30$

    E $y = \frac{2}{5x}, \quad y = \frac{2}{15}$