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 $\{x \mid -2 \leq x \leq 18\}$

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

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

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

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

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**: $27x^3y - 300xy$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

E $\frac{1}{y}$

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