

Name: _____

Date: _____

Math 8 Enriched: Section 3.10 Solving Problems Involving Factoring:

1. Factor and solve all the equations below:

i) $x^2 + 8x + 15 = 0$	ii) $x^2 - 7x + 12 = 0$	iii) $x^2 - x - 20 = 0$
iv) $x^2 - 10x + 24 = 0$	v) $x^2 + 15x + 56 = 0$	vi) $x^2 - x - 42 = 0$
vii) $x^2 - 9x + 25 = 5$	viii) $x^2 - 16x + 50 = -13$	ix) $x^2 - 6x - 20 = -4$
x) $x^2 - 5x + 16 = 3x$	xi) $x^2 - 10x + 16 = 4 - 2x$	xii) $x^2 - 8x - 40 = 4 - x$
xiii) $2x^2 - 72 = 0$	ixx) $9x^2 - 100 = 0$	xx) $32x^2 - 242 = 0$

2. What is the sum of the two numbers that satisfy the equation: $x^2 - 6x - 7 = 0$

3. Determine all real numbers "x" such that $(x+3)(x-6) = -14$

4. What is the product of the two numbers that satisfy the equation: $5x^2 - 20 = 0$

5. Determine the average of the numbers that satisfy the equation: $x^3 - 6x^2 + 5x = 0$

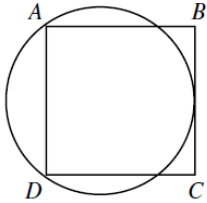
6. Determine all real numbers "x" such that: $2^{2x} - 3(2^x) - 4 = 0$

7. Determine all real numbers "x" such that: $(x^2 - 3x)^2 = 4 - 3(3x - x^2)$

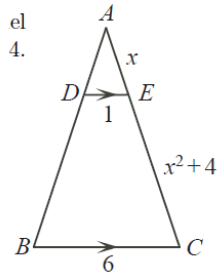
8. If $x^2 - x - 2 = 0$, determine all possible values of: $1 - \frac{1}{x} - \frac{6}{x^2}$

9. Determine all the possible values of "k" so that the expression can be factored: $x^2 + kx - 24 = 0$
10. Two numbers differ by 6. The sum of their squares is 90. Find the numbers.
11. A man runs around the circumference of a circle with a radius of 10km. If he can see 20meters in either direction, what is the area of all the land that he can see?
12. The sum of the first "N" terms of the series: $1 + 2 + 3 + 4 + \dots + N$ is given by the formula: $S = N(N + 1)$.
What is the sum of the first 20 terms? B) How many terms are there if the sum is 110?
13. If $ax^3 + bx^2 + cx + d = (x^2 + x - 2)(x - 4) - (x + 2)(x^2 - 5x + 4)$ for all values of "x". What is the value of $a + b + c + d$?

14. Each side of a square is ABCD is 8. A circle is drawn through "A" and "D" so that it is tangent to BC. What is the radius of the circle?



15. In the diagram, "D" is on AB and "E" is on AC with DE parallel to BC. Also $DE=1$, $BC=6$, $AE = x$, and $EC = x^2+4$. Determine all possible values of "x"



16. Find all the integer values of "x" that makes this inequality true: $(x - 4)(x + 4) < 0$

17. Challenge: Find all the integer values of "x" that make this equation true? $(x^2 + 12x + 36)^{(x^2+6x+8)} = 1$