Integrated Math 1 Name _____

Test – Exponent Laws, Radicals, Scientific Notation, Simplifying Polynomials and Factoring.
Throughout this test, unless otherwise stated, all expressions should be simplified as much as possible. All radical answers should be expressed in simplified radical form.
When appropriate, your answers should be written to an appropriate degree of accuracy.

Date _____ Block _____
Be sure to show all of your working for full credit. Circle your final answer. Maximum Mark 80

1. Simplify: $\left(5x^3+6x^2-3\right)-\left(2x^3-3x^2+5x-9\right)$ [2 marks]	2. Simplify: $7x^2\left(5x^2-2x+4\right)$ [2 marks]
3 The **volume, V**, of a right rectangular prism can be found by using the formula, **V = *lwh***, where ***l*** is the length, ***w*** is the width, and ***h*** is the height.	
(a) Find the volume of a prism with length of $\sqrt{3}$ cm, width of 2 cm and height of $\sqrt{12}$ cm. [2 marks]	(b) Suppose that a different prism has a **length of 2x**, a **width of 3y**, and a **height of x^2**. Find the volume. [2 marks]
4. Simplify and make sure your answer has no zero or negative exponents.	
(a) $\dfrac{m^{20}}{\left(m^2\right)^8}$ [2 marks]	(b) $(-4m^2n^4)^2(-3m^3n)^0$ [2 marks]
5. (a) The distance from the Earth to the Moon is approximately 384,000 km. Write this distance in meters in scientific notation. [2 marks]	(b) A piece of paper has a thickness of approximately 1.8×10^{-4} meters. How many pieces of paper would need to be stacked together to build a tower that reached the moon? [2 marks]
(c) The volume of the moon is approximately $2.2\times10^{10}\,km^3$. Write this quantity in ordinary decimal notation [2 marks]	
6. Write in simplest radical form	
(a) $\sqrt{108}$ [2 marks]	(b) $\dfrac{\sqrt{126}}{\sqrt{7}}$ [2 marks]
(c) $\sqrt{63}-\sqrt{28}$ [2 marks]	

7. Remove the brackets. Simplify if possible	
(a) $(2h-9)^2$ [2 marks]	(b) $(x+y)(2x-3y)$ [2 marks]
(c) $(2x+y)(y-2x)$ [2 marks]	(d) $(3x-6)(-5+2x)$ [2 marks]

8. Factor each Polynomial Completely. If it cannot be factorized write "prime"

(a) $16xy^2 - 8y^2z + 40y^2$ [2 marks]

(b) $x^2 + 6x + 2$ [2 marks]

(c) $x^2 - 12x + 32$ [2 marks]

(d) $49a^2 - 25$ [2 marks]

(e) $6a^2 + 13a - 8$ [3 marks]

(f) $16h^2 + 24h + 9$ [3 marks]

9. Solve the following equations

(a) $3k^2 + 7k - 6 = 0$ [4 marks]

(b) $z^2 + 10 = -11z$ [5 marks]

(c) $12x-9 = 4x^2$ (5 marks]

(d) Justify your solution to pt (a) OR pt (b) OR pt (c) [2 marks]

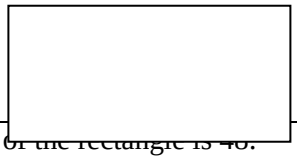
10. Joseph thinks of a number. The sum of his number and the square of the number is 90

(a) Translate the statement above into a mathematical equation [2 marks]

(b) Solve your equation from part (a) [4 marks]

(c) What number was Joseph thinking of? Give all possible answers. [1 mark]

10. Use the rectangle on the right to answer the questions



(a) Write the area of the rectangle in standard form. [2 marks]

(b) Suppose the area of the rectangle is 48. Write and solve an equation to find the value of x. Show all your workings; a guess and check method will NOT receive full credit. [5 marks]

(c) Use your answer from pt b to find the length of a diagonal of the rectangle. Give your answer in simplified radical form. [4 marks]