SchoolNova, Math 5b Placement Test Review May 5, 2019

1. In the following right triangle, determine the length of the third side.



2. Express each of the following decimals as fractions $\frac{m}{n}$, where *m* and *n* are integers: (a) $0.\overline{7}$ (b) $0.\overline{45}$ (c) $0.\overline{375}$ (d) $1.\overline{2}$

- 3. Solve the following equations, and check your solution:
 - (a) $\frac{x}{5} = 4$
 - (b) $\frac{x+1}{3} = 8$
 - (c) $\frac{5}{8}x = 10$
 - (d) $\frac{1}{2}x = \frac{1}{4}x + 2$
 - (e) $\frac{x}{2} \frac{x}{4} = 4$
 - (f) $\frac{x+2}{x+5} = 3$

- 4. Solve the following equations containing absolute values, and plot on a number line:
 - (a) |x| = 4.
 - (b) |x+2| = 7.
 - (c) |3x 2| = 4.

- 5. Determine each of the following products, that is, open the parenthesis and collect like terms:
 - (a) $(x+y) \times (x+y)$
 - (b) $(x+y) \times (x-y)$
 - (c) $(x+y)^2$
 - (d) $(x+3y) \times (x+5y)$

- 6. Simplify the following expressions:
 - (a) $\frac{25^{-4}}{5^2}$
 - (b) 2^{3^2}
 - (c) $\frac{2^{-5}}{4^{-2}}$
 - (d) $\frac{x^2 y^2}{x^4 y^5}$

- 7. Solve the following equations for x:
 - (a) $5^x = 25$
 - (b) $6^x = 1$
 - (c) $3^x = 3^2 3^3$
 - (d) $7^{2x} = 49$
 - (e) $4^x = 2^3$
 - (f) $(3^4)^x = 81 \times 3^6$

(g)
$$8 \times 2^{x+2} = 32$$

8. Write all numbers from 0 through 32 in base-2 and base-4.

9. Convert each of the following binary numbers to its equivalent decimal number:(a) 11011 (b) 1001 (c) 1100

10. Find the base-2 representation of each of the following decimal numbers:

(a) 25 (b) 128 (c) 33

- 11. (a) An urn contains 10 red, 12 green and 15 purple balls. We draw one ball from the urn at random. What is the probability that it is red?
 - (b) We put back the previously drawn ball.
 - (c) We draw another ball. What is the probability that it is not purple?