Name: **Show all work. No calculators.** Time:

1. Evaluate the following expression if x = 3 and y = 4.

$$x^2y - y^3 + x^{1/2}$$

2. Simplify:

$$\frac{-2 - 2(1 - 5)}{-2 - 3}$$

3. Simplify and write the answer with all variables in the numerator.

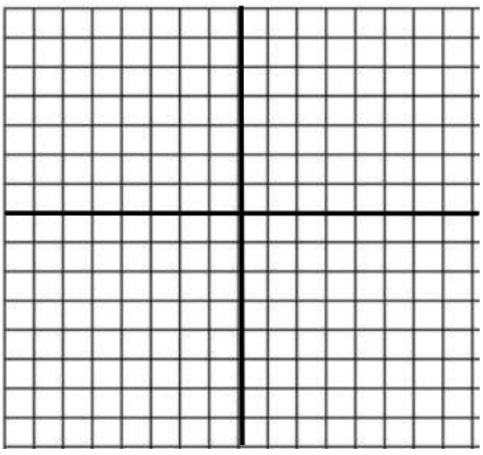
$$\frac{(xm^{-1})^{-3}x^2m^2}{(x^0y^2)^{-2}xy}$$

4. Solve for x:

$$3\left(\frac{5}{6} - \frac{5}{3}x\right) = -\left(-\frac{1}{2} + x\right)$$

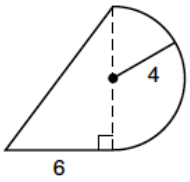
5. The total value of the pennies and nickels was $14.50. Hannah counted the coins and found there were 450 coins in all. How many of each type of coin did she have?

6. Graph y = 3x + 5. Determine the slope of the line and its y-intercept.

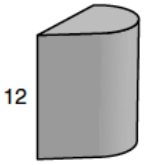


7. **(a)** Find the **perimeter** of the figure shown on the left below. Dimensions are in meters. **(b)** Find the **area** of the figure. **(c)** The figure shown is the base of a geometric solid whose sides are perpendicular to the base and whose height is 12 meters. A depiction of the solid is shown on the right. Find its **volume. Leave π as π**.

a & b



c



8. The scores that Frank achieved on his five tests were 90, 70, 70, 85, and 95. Find the range, mean, median, and mode of the five test scores.

9. Twice a number is decreased by 7, and this quantity is multiplied by 3. The result is 9 less than 10 times the number. What is the number?

10. Factor the trinomials. Begin by writing the trinomials in descending order of the variables and by factoring out the greatest common factor.

$$4x + x^2 - 21$$

11. Ramses cogitated. He thought of three consecutive even integers and found that 3 times the sum of the first two was 58 less than 14 times the opposite of the third. What were his integers?

12. Simplify using proper scientific notation:

$$\frac{0.000030\times10^{-18}}{(5000\times10^{-14})(300\times10^{5})}$$

13. Simplify:

$$-3^0[(-3^2+4)(-2^2-2)-(-2)+4]-\sqrt[3]{-8}$$

14. Indicate whether the following numbers are rational numbers or irrational numbers.

(a) $0.\overline{3}$

(b) $\frac{\pi}{100}$

(c) $\sqrt{9-4}$

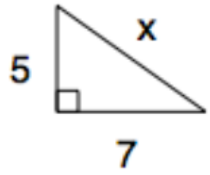
(d) $\frac{25}{7}$

15. Evaluate if a = 2, b = 5, and c = 2.

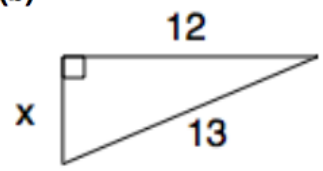
$$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

16. Use the Pythagorean theorem to find x.

(a)



(b)



17. Use substitution to solve for x and y.

$$\begin{cases} 3x - 3y = 3 \\ x - 5y = -3 \end{cases}$$

18. Graph:

$$|x| > 2$$

19. There were 52 bricks, and some were red, and some were white. The red bricks numbered 16 more than twice the number of white bricks. How many bricks of each color were there?

20. Solve by factoring:

$$x^2 - 15 = 2x$$

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The End