

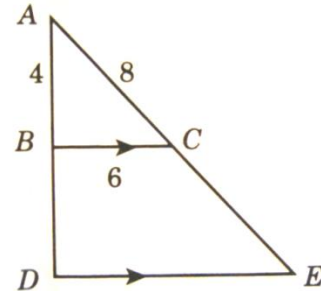
Summer Math Review**DUE: the first day of school**

Complete the following problems and questions fully and carefully. Simplify your solutions completely. Show all of your work, and circle your final answers.

PART 1: Geometry Review

For problems 1-2, use the figure to the right. Consider each problem separately.

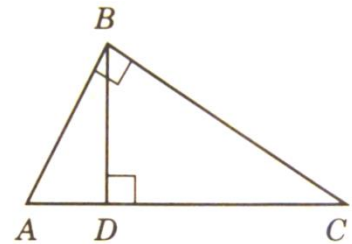
1.) If $CE = 12$, then $BD =$ _____.



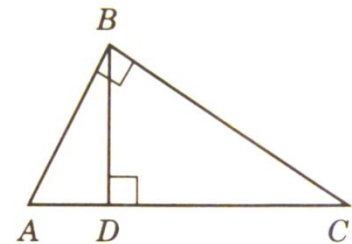
2.) If $BD = 8$, then $DE =$ _____.

For problems 3-6, use the figure to the right. Consider each problem separately.

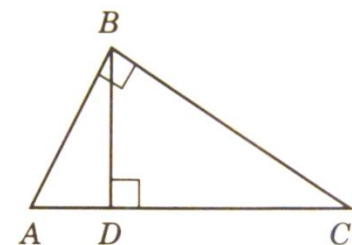
3.) If $AB = 6$ and $BC = 10$, then $AC =$ _____.



4.) If $\angle A = 60$ and $AB = 5$, then $BC =$ _____ and $AD =$ _____.

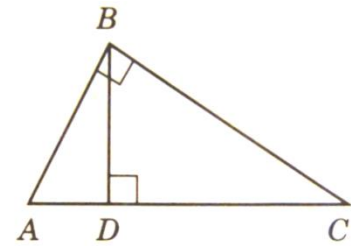


5.) If $\angle DBC = 45$ and $BC = 7$, then $BD =$ _____.



6.) If $AD = 3$ and $DC = 6$, then $AB =$ _____.

Hint: use a geometric mean.



7.) In an equilateral triangle with sides of length 10, what is the length of an altitude?

8.) If a cylinder has a radius of $7x$ and a height of $3xy$, write an expression that gives the volume of the cylinder.

9.) If a pyramid has a square base with sides of length $6z$ and has a slant height of $10z$, write an expression that gives the total area of the pyramid.

10.) If a sphere has a volume of $36\pi m^3$, what is its area?

11.) If a trapezoid has bases of lengths 4 and 7 and has a height of 2, what is its area?

PART 2: Basic Algebra Review

There will be a large quiz over Part 2 on the second day of this class.

For problems 1-9, evaluate each expression using the Order of Operations, simplifying completely. Show every step.

1.) $7 \cdot (3 - 4) + (-3)^2 - 2 + 1^7$

2.) $-3[2 - (7 - 5)^2]$

3.) $16\left(-\frac{3}{4}\right) \div \left(-\frac{3}{2}\right)$

4.) $5\sqrt{20} - 9\sqrt{5}$

5.) $\frac{12}{\sqrt{3}}$

6.) $(2\sqrt{7} + 4)^2$

(Rationalize the denominator)

7.) $\frac{-24\left[-18 \div \left(-\frac{2}{3}\right)\right]}{(-18)\left(-\frac{2}{3}\right)}$

8.) $\frac{\left[\frac{4}{9} - \left(-\frac{2}{9}\right)\right]\left[\frac{2}{3} - \left(-\frac{2}{3}\right)\right]^2}{\frac{5}{9} \div \left(-\frac{10}{3}\right)}$

9.) $\frac{\frac{-72}{(-4)(-3)}}{(-4 - (-2))^2}$

For problems 10-13, evaluate the expression for the given values of the variables.

10.) $-4(t + 7)^2 - 5$ when $t = -6$.

11.) $x + 5|-y - 2|$ when $x = -8$ and $y = -3$

12.) $\frac{6a+2}{2}$ when $a = 5$

13.) $2\sqrt{3z}$ when $z = 9$

For problems 14-16, insert grouping symbols in each expression to make a true equation.

Example: $3 + 2^2 - 10 \div 5 = 3$

14.) $18 \div 2 - 3 \cdot 2 + 1 = 0$

Solution: $[(3 + 2)^2 - 10] \div 5 = 3$

15.) $6 - 5 - 3 \cdot 2 = 8$

16.) $3^2 - 2^2 - 4 \cdot 3 + 3 = 25$

For problems 17-22, simplify the expression as far as possible.

17.) $4(3 - y) + 2(1 - y)$

18.) $-c(d + 5) + 6(2 - cd)$

19.) $-3t + 7(-2 - 4t)$

20.) $\frac{3v-8}{-12}$

21.) $(-4x^3 + 2x^2 - 8x + 5) + (2x^3 + 6x - 1)$

22.) $3\sqrt{75c^2}$

For problems 23-28, solve each equation, showing every step.

23.) $3(x - 2) + 4x = 10 - x$

24.) $4 = 9 - 3(2w + 1) - 5w$

25.) $2q - 4 + 8q = 7q - 8 + 3q$

26.) $\frac{2}{5}(25z - 30) = \frac{3}{4}(12z + 16)$

27.) $|2x - 4| - 8 = -2$

28.) $x^2 + 8x + 15 = 0$

For problems 29-30, solve the formula for the given variable.

29.) Solve $K = \frac{1}{2}mv^2$ for v .

30.) Solve $d = \frac{m}{V}$ for V .

For each description, write an algebraic expression.

31.) One more than the square of a number x

32.) The reciprocal of two more than a number x

33.) the length of a leg of an isosceles triangle whose perimeter is 300 and whose base is b

34.) the average of the measures of three angles of a quadrilateral whose fourth angle is a°

35.) -19 divided by the quantity g plus h

36.) Add $2x$ and 6 , then multiply by the square of y

For problems 37-38, choose a variable to represent the unknown quantity and then write an equation that describes the given situation. Finally, solve the equation and answer the question.

Example: Leo swims two fewer laps than Mary. If both added seven laps to their daily swims, the sum of their laps would be three times as many as Mary now swims. How many laps did Mary originally swim?

Solution: Let m = the number of laps Mary originally swam.

$$(\text{Leo's original laps}) + 7 + (\text{Mary's original laps}) + 7 = 3 * (\text{Mary's original laps})$$

$$(m - 2) + 7 + m + 7 = 3m$$

$$m = 12$$

Mary originally swam 12 laps.

37.) Max has twice as much money as Katy, who has \$12 more than Greg. All three together have \$124. How much money does Greg have?

38.) In quadrilateral $ABCD$, the measure of $\angle A$ exceeds the measure of $\angle B$ by 20° . Also, the measure of $\angle D$ is twice the measure of $\angle B$ and half the measure of $\angle C$. What is the measure of $\angle B$?