

# MATH A · UNIT 1 REVIEW

## INSTRUCTIONS:

Show all of your work on separate paper, do not write answers on this review sheet. Number each problem in order on your paper and box your answers. Follow directions for each problem.

**I. Use order of operations to find the value of each of the following. (See sections 1.5 – 1.8)**

1)  $3 - 3(4^2 - 2^2)$       2)  $\frac{(3)(5)}{(8-7) \cdot 3}$       3)  $12 \div 3 \cdot 2 + 4$

4)  $\frac{6 + 2^2}{17 - 6 \cdot 2}$       5)  $-16 \div 2 \cdot 4 + 32$       6)  $10 - (-2) - 5$

7)  $-14.3 + (-5.5) + 6.2$       8)  $[(11.5 - 2.9) - (2.4)(1.5)] \div 2.5$

**II. Perform the indicated operations and reduce to lowest terms. (See sections 1.2, 1.5 – 1.8)**

9)  $\frac{2}{3} - \frac{1}{4}$       10)  $-\frac{1}{2} + \frac{3}{5}$       11)  $\frac{3}{4} + \frac{5}{3} - 2$       12)  $-\frac{2}{5} - \frac{2}{5}$

13)  $\left(-\frac{1}{2} \div \frac{3}{2}\right)\left(-\frac{9}{2}\right)$       14)  $\left(-\frac{2}{5} \div \frac{2}{5}\right)\left(-\frac{2}{3}\right)$       15)  $\frac{2}{5} + \frac{5}{2} + 3$       16)  $\left(-\frac{5}{3} \div \frac{1}{3}\right) \cdot \left(\frac{4}{5}\right)$

**III. Evaluate each of the following algebraic expressions if  $a = -1$ ,  $b = -2$ ,  $c = 3$ . (See section 1.1)**

17)  $(c - a)(c - b)$       18)  $a^2 - 4b$       19)  $\frac{b - c}{2b - a}$

20)  $a^2 - 2ab + b^2$       21)  $(a - b)b$       22)  $\frac{-a^2 + c}{-b}$

23)  $-2(b^2 - ac)$       24)  $4(-c + b^2)$

**IV. Simplify. (See sections 1.4, 1.8)**

25)  $7(y - 1) + 10$       26)  $3(m - 2) - (1 + m)$       27)  $4(x + 5) - 2(7 + x)$

28)  $4[-y - (y + 5)]$       29)  $-2[3 - (2w + 5)] + w$       30)  $-[-4 + (3 + 2x)]$

**V. Do the following problems.****(See section 1.2)**

31) The formula  $C = \frac{5}{9}(F - 32)$  expresses the relationship between Fahrenheit temperature,  $F$ , and Celsius temperature,  $C$ . Use the formula to convert  $41^\circ F$  to its equivalent temperature on the Celsius scale.

32) If the temperature is  $50^\circ F$ , use the formula from the previous problem to find the equivalent temperature on the Celsius scale.

33) The maximum heart rate, in beats per minute, that you should achieve during exercise is 220 minus your age,  $a$ :

$$220 - a$$

If your exercise goal is to improve overall health, the following range for target heart rate,  $H$ , in beats per minute should be reached:

Lower limit of range:  $H = \frac{1}{2}(220 - a)$

Upper limit of range:  $H = \frac{3}{5}(220 - a)$

- a. **What is the lower limit of the heart range, in beats per minute, for a 30-year old with this exercise goal?**
  
- b. **What is the upper limit of the heart range, in beats per minute, for a 30-year old with this exercise goal?**

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**VI. Solve each equation and check your answer.**

**(See sections 2.1 – 2.3)**

34)  $2x - 5 = 9$

35)  $3y - 8 = -5y$

36)  $15 - 4t = 7 - 2t$

37)  $2(m - 4) + 4 = 5(9 - m)$

38)  $7(z - 2) = -3(4 - z)$

39)  $1 - (y + 2) = 4(y + 3)$

40)  $5 + \frac{x}{2} = 9$

41)  $\frac{4x}{5} - 2 = -\frac{7}{20} + \frac{x}{4}$

42)  $\frac{z}{4} = 7 - \frac{z}{3}$

**VII. Solve each equation for  $x$ .**

**(See section 2.4)**

43)  $mx + e = t$

44)  $J = 6 - x$

45)  $2x - b = 5x$

46)  $k - 4x = 4x$

47)  $y = mx + b$

**VIII. Do the following problems. Round to the nearest cent.**

**(See section 2.4)**

48) Suppose that the local sales tax rate is 6% and you buy a car for \$16,800.

- a) How much tax is due?
- b) What is the car's total cost?

49) Suppose that the local sales tax rate is 7% and you buy a graphing calculator for \$96.

- a) How much tax is due?
- b) What is the calculator's total cost?

50) Suppose that a textbook costs \$96.50 and the sales tax rate is 7.5%. Find the tax due and the total cost.

**IX. Do the following problems. Write an equation.**

**(See section 2.5)**

51) A rectangular field is five times as long as it is wide. If the perimeter of the field is 288 yards, what are the field's dimensions?

52) An American football field is a rectangle with a perimeter of 1040 feet. The length is 200 feet more than the width. Find the width and length of the rectangular field.

53) A basketball court is a rectangle with a perimeter of 86 meters. The length is 13 meters more than the width. Find the width and length of the basketball court.

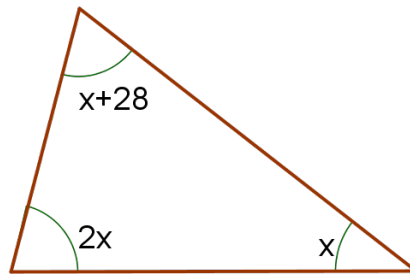
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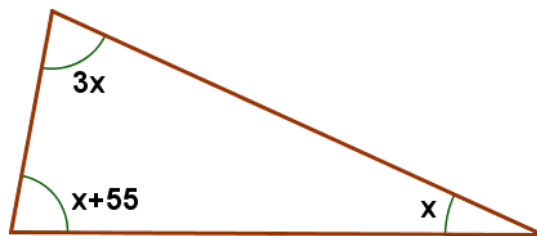
**X. Write each sentence as an equation, then solve the equation.**

(See section 2.5, 2.6)

- 54) One angle of the triangle is twice as large as another. The measure of the third angle is 28 more than the smallest angle. Find the measure of each angle.



- 55) One angle of the triangle is three times as large as another. The measure of the third angle is 55 more than the smallest angle. Find the measure of each angle.



- 56) The quotient of a number and five, increased by 27, is 51. Find the number.
- 57) One angle of a triangle is twice as large as another. The measure of the third angle is  $20^\circ$  more than that of the smallest angle. The sum of the angles is one hundred and eighty degrees. Find the measure of each angle.
- 58) One angle of a triangle is the sum of twelve and two times the smallest angle. The measure of the third angle is three times as large as the smallest angle. Find the measure of each angle.
- 59) Two angles of a triangle have the same measure. The third angle is eighteen subtracted from four times the measure of the other angles. Find the measure of each angle.

**XI. Solve the inequality. Graph the solution on a number line.  
Write your answer using interval notation.**

(See section 2.7)

60)  $x+3 > -2$

61)  $5x-4 \leq 2x-1$

62)  $-3x-11 \geq -2x+1$

63)  $5 + \frac{x}{-2} \leq 9$

64)  $-15x > 45$

65)  $\frac{x}{-4} + 2 \leq -5$

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1)  $-33$

2)  $5$

3)  $12$

4)  $2$

5)  $0$

6)  $7$

7)  $-13.6$

8)  $2$

9)  $\frac{5}{12}$

10)  $\frac{1}{10}$

11)  $\frac{5}{12}$

12)  $-\frac{4}{5}$

13)  $\frac{3}{2}$

14)  $\frac{2}{3}$

15)  $\frac{59}{10}$

16)  $-4$

17)  $20$

18)  $9$

19)  $\frac{5}{3}$

20)  $1$

21)  $-2$

22)  $1$

23)  $-14$

24)  $4$

25)  $7y+3$

26)  $2m-7$

27)  $2x+6$

28)  $-8y-20$

29)  $5w+4$

30)  $-2x+1$

31)  $5^{\circ}C$

32)  $10^{\circ}C$

33) a) 95 bpm; b) 114 bpm

34)  $x=7$

35)  $y=1$

36)  $t=4$

37)  $m=7$

38)  $z=\frac{1}{2}$

39)  $y=-\frac{13}{5}$

40)  $x=8$

41)  $x=3$

42)  $z=12$

43)  $x=\frac{t-e}{m}$

44)  $x=6-J$

45)  $x=-\frac{b}{3}$

46)  $x=\frac{k}{8}$

47)  $x=\frac{y-b}{m}$

48) \$1008 tax; \$17,808 total cost

49) \$6.72 tax; \$102.72 total cost

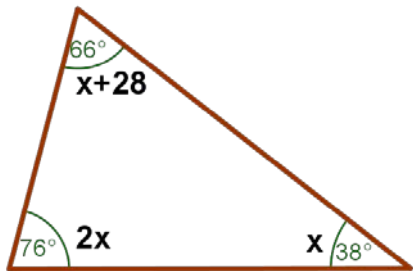
50) \$7.24 tax; \$103.74 total cost

51) 24 yards by 120 yards

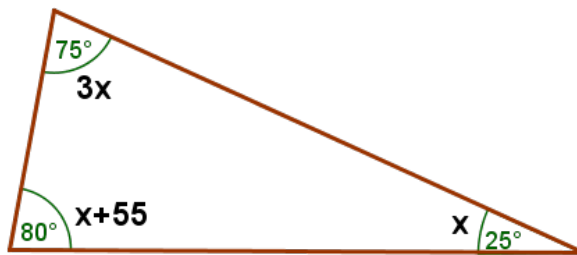
52) 160 feet by 360 feet

53) 15 m by 28 m

54)  $x = 38^\circ$ ;  $2x = 76^\circ$ ;  $x + 28 = 66^\circ$



55)  $x = 25^\circ$ ;  $3x = 75^\circ$ ;  $x + 55 = 80^\circ$



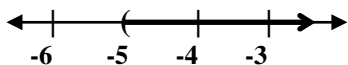
56)  $\frac{n}{5} + 27 = 51$ ;  $n = 120$

57)  $x + 2x + 20 + x = 180$   
angles:  $40^\circ$ ,  $80^\circ$ ,  $60^\circ$

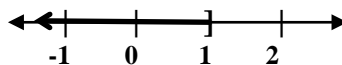
58)  $x + 2x + 12 + 3x = 180$   
angles:  $28^\circ$ ,  $68^\circ$ ,  $84^\circ$

59)  $x + x + 4x - 18 = 180$   
angles:  $33^\circ$ ,  $33^\circ$ ,  $114^\circ$

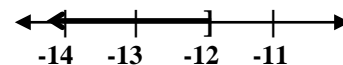
60)  $x > -5$ ;  $(-5, \infty)$



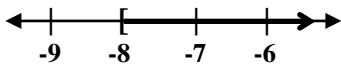
61)  $x \leq 1$ ;  $(-\infty, 1]$



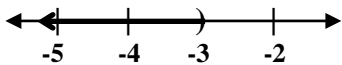
62)  $x \leq -12$ ;  $(-\infty, -12]$



63)  $x \geq -8$ ;  $[-8, \infty)$



64)  $x < -3$ ;  $(-\infty, -3)$



65)  $x \geq 28$ ;  $[28, \infty)$

