

Math 2 Semester 1 Final Review 2022 (Master)

Monday, October 31, 2022 7:25 AM

Math 2
Final Review Semester 1

Name: _____ Per. _____

1) $\angle A$ and $\angle B$ are complementary. If $m\angle A = (2x - 1)^\circ$ and $m\angle B = (4x + 55)^\circ$, find x and then find both angles.

$$\begin{aligned} 2x - 1 + 4x + 55 &= 90 & X &= 6 \\ 6x + 54 &= 90 \\ 6x &= 36 \end{aligned}$$

2) Match each expression with its equivalent

- | | | |
|----------------------|---|----------------------|
| I. $\sqrt[4]{3^5}$ | B | A. $2^{\frac{4}{5}}$ |
| II. $\sqrt{3}$ | D | B. $3^{\frac{5}{4}}$ |
| III. $\sqrt[5]{2^4}$ | A | C. $2^{\frac{1}{5}}$ |
| IV. $\sqrt[5]{2}$ | C | D. $3^{\frac{1}{2}}$ |

3) Solve for x . $(3^{2x})(3^{4x}) = 3^{12}$

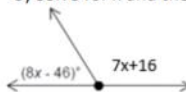
$$\begin{aligned} 2x + 4x &= 12 \\ 6x &= 12 \\ x &= 2 \end{aligned}$$

4) Simplify the expression using Properties of Exponents:

$$(6x^4y^4)(3x^3y^9)$$

$$18x^7y^{13}$$

5) Solve for x and the missing angles.



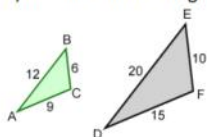
$$\begin{aligned} 8x - 46 + 7x + 16 &= 180 \\ 15x - 30 &= 180 \\ 15x &= 210 \\ x &= 14 \end{aligned}$$

6) Use the formula: $A = P(1 + \frac{r}{n})^{nt}$ Compounded Monthly, $P = \$7,500$, $r = 7.5\%$, $t = 8$ years

Find the total amount of money in an account at the end of the given time period. Round to the nearest hundredth.

$$7500(1 + \frac{0.075}{12})^{8 \cdot 12} = 13640.40$$

7) For the similar triangles below, what is the scale factor going from $\triangle ABC$ to $\triangle DEF$?



$$\frac{12}{20} = \frac{3}{5}$$

8) Write $8x^3 - 2 + x^5 - 7x - 15x^2$ in standard form.

$$x^5 + 8x^3 - 15x^2 - 7x - 2$$

9) Find the product of $-4z^2(3z^2 + 8z - 5)$

$$-12z^4 - 32z^3 + 20z^2$$

10) Factor out the greatest common factor from the polynomials.

a) $4x^3 - 7x^2 + 21$

$$1$$

b) $2x^3 - 4x^2 + 20x$

$$2x(x^2 - 2x + 10)$$

11) Factor the perfect square trinomial $x^2 - 10x + 25$

$$(x - 5)^2$$

12) Factor the following: $100x^2 - 49$

$$(10x + 7)(10x - 7)$$

13) Multiply $(9x + 5)(3x - 2)$

$$27x^2 - 3x - 10$$

14) Multiply $(4x + 2)(x^2 + 4x + 6)$

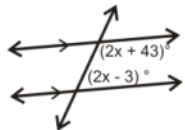
$$4x^3 + 16x^2 + 24x + 2x^2 + 8x + 12$$

$$4x^3 + 18x^2 + 32x + 12$$

15) Multiply $(7x + 4)^2$

$$49x^2 + 56x + 16$$

16) Solve for x and all the missing angles.

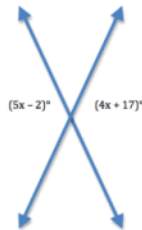


$$4x + 40 = 180$$

$$4x = 140$$

$$x = 35$$

17) Solve for x and all the missing angles.



$$5x - 2 = 4x + 17$$

$$x = 19$$

18) Define when we would use the following words in a proof and draw a picture for each.

a) reflexive

$$A = A$$

b) Bisected



c) Vertical angles

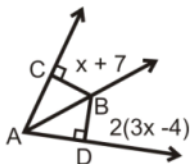


d) alternate interior angles



19) Ray AB is an angle bisector of angle CAD.

Find the value of x .



$$x + 7 = 2(3x - 4)$$

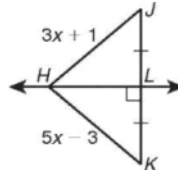
$$x + 7 = 6x - 8$$

$$-5x = -15$$

$$x = 3$$

20) Line HL is a perpendicular bisector of segment KJ.

Find the value of x .

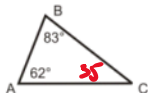


$$3x + 1 = 5x - 3$$

$$-2x = -4$$

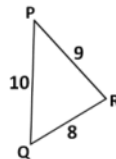
$$x = 2$$

21) List the sides from shortest to longest.



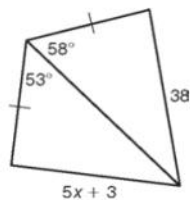
AB, BC, AC

22) List the angles from smallest to biggest.



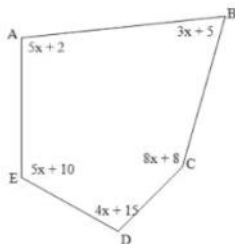
$\angle P, \angle Q, \angle R$

23) Write an inequality for the values of x.



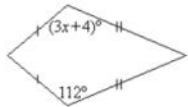
$$\begin{aligned} 5x+3 &< 38 \\ 5x &< 35 \\ x &< 7 \end{aligned}$$

24) Solve for x.



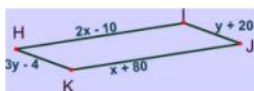
$$\begin{aligned} 20x + 40 &= 540 \\ 20x &= 500 \\ x &= 25 \end{aligned}$$

25) Looking at the kite below, solve for x.



$$\begin{aligned} 3x+4 &= 112 \\ -4 & \quad -4 \\ 3x &= 108 \\ x &= 36 \end{aligned}$$

26) Solve for x and y.



$$\begin{aligned} 3y-4 &= y+20 & 2x-10 &= x+80 \\ 2y &= 24 & x &= 90 \\ y &= 12 \end{aligned}$$

27) Find the coordinates of each vertex of the triangle.

$D_{\frac{1}{3}}(\triangle ABC)$, given $A(6, -3), B(9, 1), C(12, -1)$

$$A'(2, -1), B'(3, \frac{1}{3}), C(4, -\frac{1}{3})$$

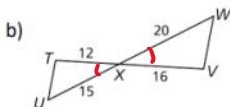
28) List the similar triangle theorems.

AA, SAS, SSS

29) Are these triangles similar? If so, why?



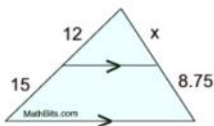
AA



SAS

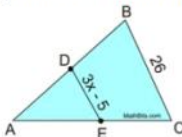
$$\begin{aligned} \frac{15}{20} &= \frac{1}{4} \\ \frac{12}{16} &= \frac{3}{4} \end{aligned}$$

30) Solve for x in the triangle below.



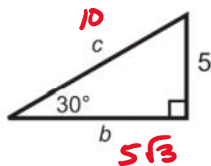
$$\begin{aligned} \frac{12}{15} &= \frac{x}{8.75} \\ 15x &= 105 \\ x &= 7 \end{aligned}$$

31) D and E are both midpoints. Solve for x.

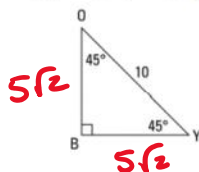


$$\begin{aligned} 3x-5 &= 13 \\ 3x &= 18 \\ x &= 6 \end{aligned}$$

32) Solve for a and b.



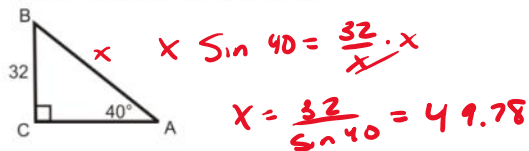
33) Find the missing sides.



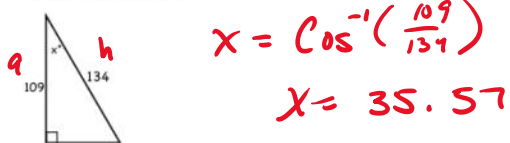
34) What phrase do we use to help us find missing sides and angles in a right triangle? For example, in #35 below what is the phrase that helps you determine which function to use?

Soh Cah Toa

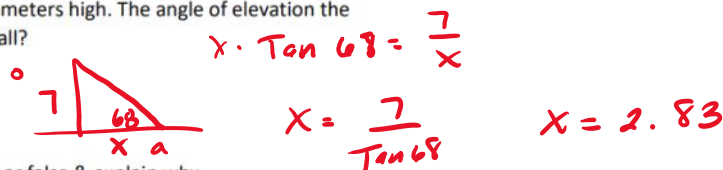
35) Solve for the side length of AB.



36) Solve for angle x.



37) A ladder placed against a wall such that it reaches the top of the wall that is 7 meters high. The angle of elevation the ladder makes with the ground is 68° . How far is the ladder from the foot of the wall?



38) A triangle with side lengths of 62 cm, 68 cm and 27 cm is a right triangle. True or false & explain why.

39) Identify a set of each of the following:

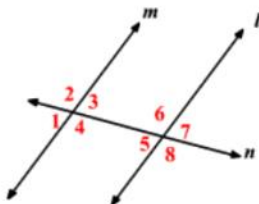
Corresponding angles: 2 3 6

Alternate interior angles: 4 5 6

Same side interior angles: 3 6

Alternate exterior angles: 2 3 8

Same Side Exterior angles: 2 3 7



Factor

40) $x^2 - 12x + 20$

$(x - 10)(x - 2)$

41) $5x^2 - 13x - 6$

$(x - 3)(5x + 2)$

42) $3x^2 - 18x + 15$

$3(x^2 - 6x + 5)$
 $3(x - 2)(x - 3)$

43) $x^2 + 5xy - 50y^2$

$(x + 10y)(x - 5y)$

44) $6x^2 - 15x - 36$

$3(2x^2 - 5x - 12)$
 $3(x - 4)(2x + 3)$