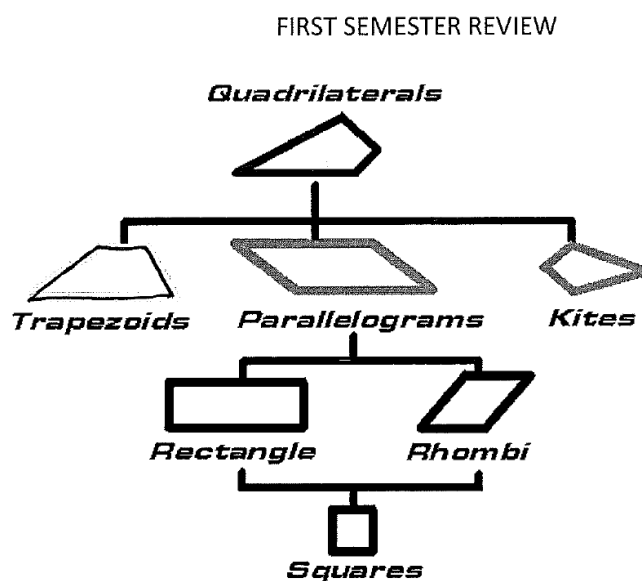
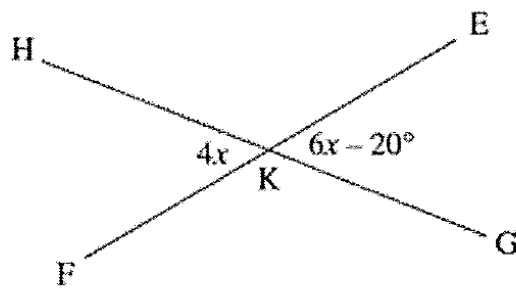


INTEGRATED 2

- 1.) Study the polygon graphic organizer and be familiar with the following:

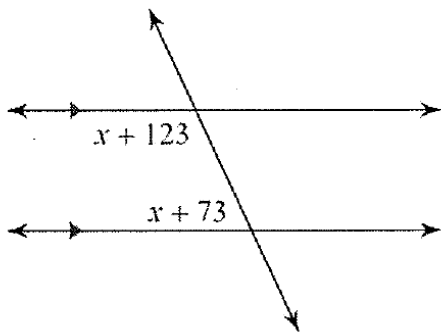


2.) The measure of $\angle EKG$ is:

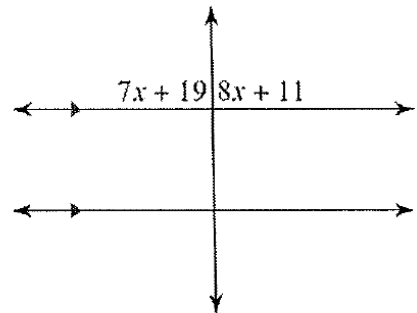


3.) Solve for x . State the angle relationship used.

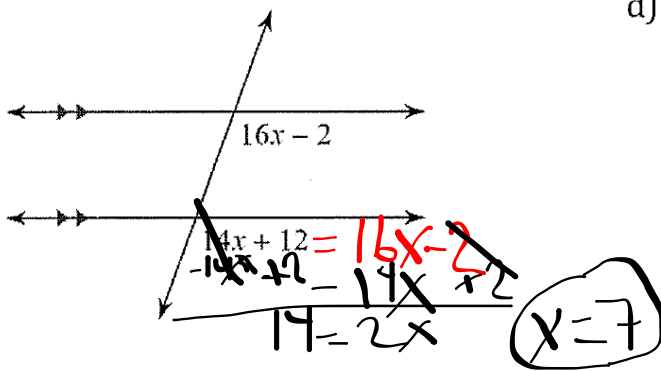
a)



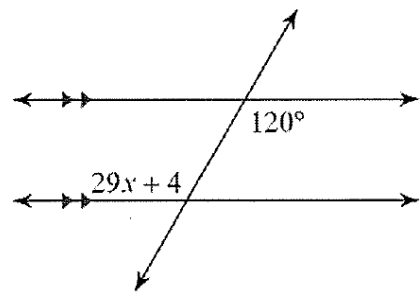
b)



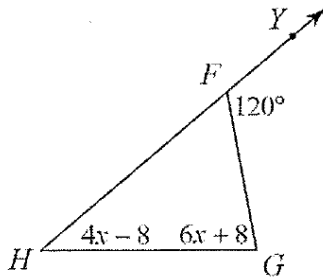
c)



d)



e)

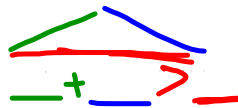


4.) Given isosceles triangle ABC with $AB = BC$. If $\angle A = 2x + 10$ and $\angle B = 6x - 20$, find $m\angle C$.

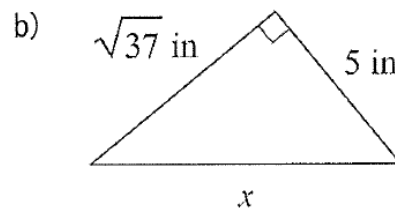
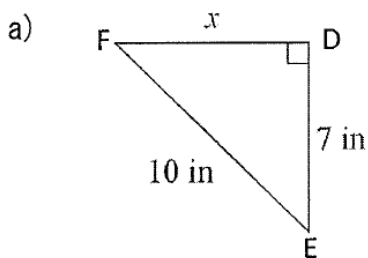
5.) State if the three numbers can be the measures of the sides of a triangle.

a) 7, 7, and 11

b) 8, 17, and 9


 The 2 sides
 needs to be
 just longer than
 the 3rd to be a \triangle .

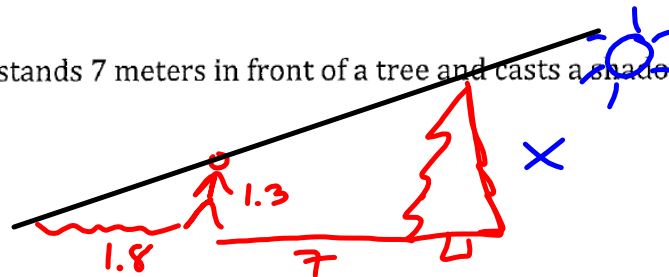
6.) Find the missing side of each triangle. Leave your answers in simplest radical form.



c) For the triangle in part (a), list the angles in order from greatest to least.

d) For the triangle in part (b), list the angles in order from least to greatest.

7.) Tonya is 1.3 meters tall. She stands 7 meters in front of a tree and casts a shadow 1.8 meters long. How tall is the tree?



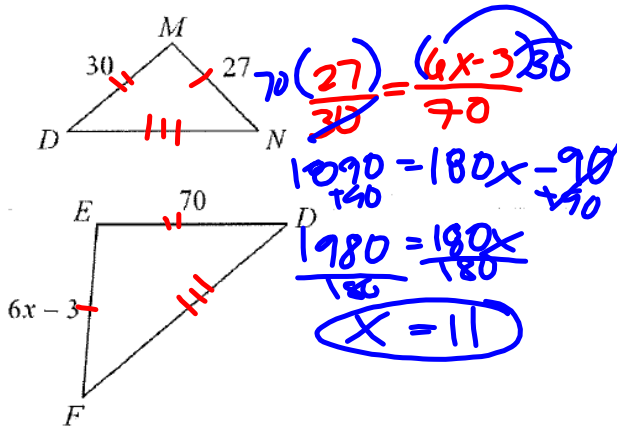
8.) Given $\triangle ABC \cong \triangle FED$:

a) Write 6 congruence statements.

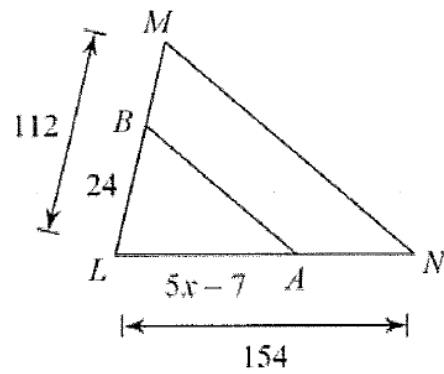
b) Does this mean that $\triangle ABC \sim \triangle FED$? Explain.

9.) If $\triangle CAT \sim \triangle DOG$, then is $\triangle CAT \cong \triangle DOG$? Explain.

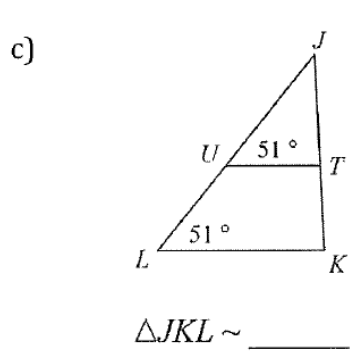
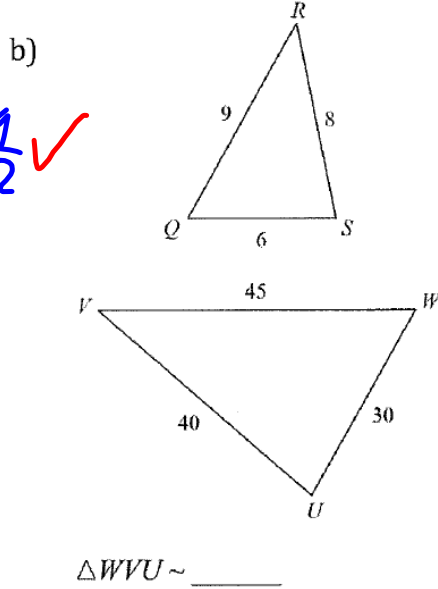
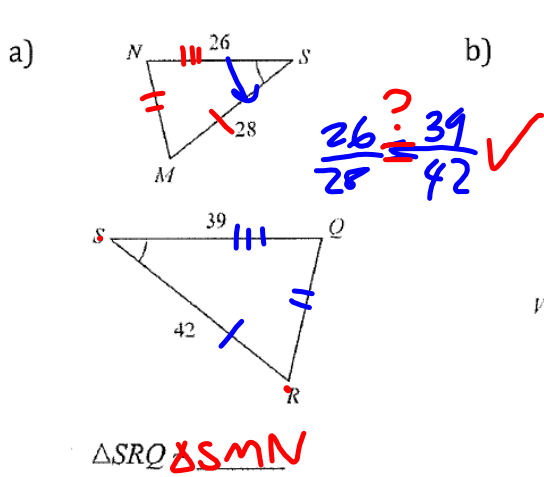
10.) a. Given $\triangle FED \sim \triangle NMD$, solve for x.



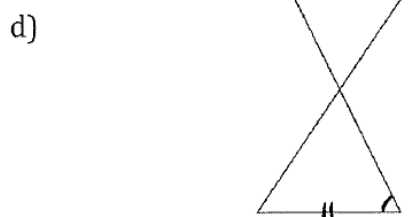
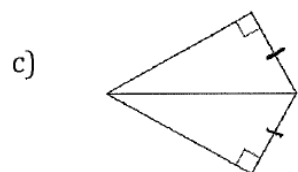
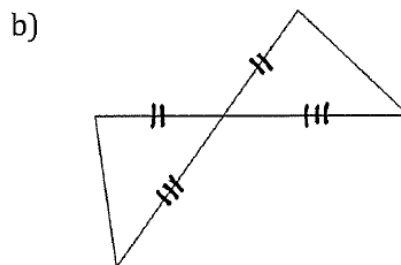
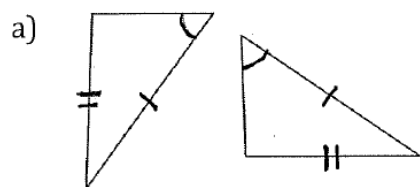
b. Given $\overline{AB} \parallel \overline{NM}$, solve for x.



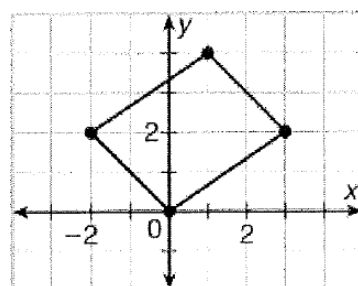
11.) Determine if each pair of triangles are similar. If so, write a similarity statement and state how you know.



12.) Determine if the two triangles are congruent. If they are, state how you know?

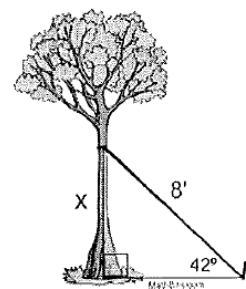


13.) A jeweler designs a setting that can hold a gem in the shape of a parallelogram. The figure shows the outline of the gem. The client, however, wants a set of smaller earrings made using the shape of this gem. Dilate the original pattern from the origin using a scale factor of $\frac{1}{2}$. What are the coordinates of the dilated figure?

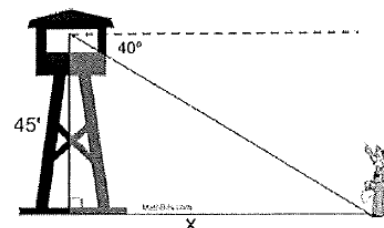


14.) What is the image of point (4,-2) after a dilation of 3?

15.) A nursery plants a new tree and attaches a guy wire to help support the tree while its roots take hold. An eight foot wire is attached to the tree and to a stake in the ground. From the stake in the ground the angle of elevation of the connection with the tree is 42° . Find to the *nearest tenth of a foot*, the height of the connection point on the tree.

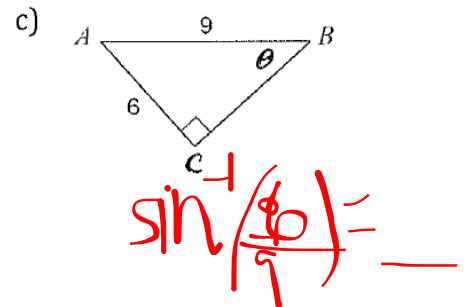
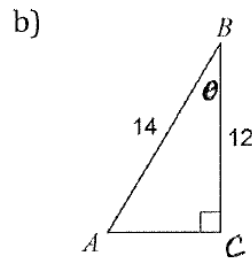
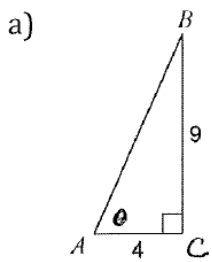


16.) From the top of a fire tower, a forest ranger sees his partner on the ground at an angle of depression of 40° . If the tower is 45 feet in height, how far is the partner from the base of the tower, to the *nearest tenth of a foot*?



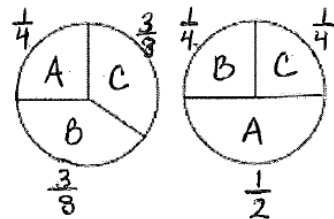
17.) Henry is flying a kite. The kite string makes an angle of 43° with the ground. If Henry is standing 100 feet from a point on the ground directly below the kite, find the length of the kite string.

18.) Find the measure of each angle indicated. Round to the nearest tenth.



19.) A fair 6-sided cube has a different color on each side – red, blue, green, orange, purple, and yellow. Evan rolls the cube 3 times. What is the probability he will roll purple all three times?

20.) The two spinners shown at right are spun at the same time. If the letters match, you win. Otherwise you lose. What is the probability that you will win? Use an area or tree diagram to help solve the problem. Show all calculations that lead to your results



$$P(AA) = \frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8}$$

$$P(CC) = \frac{3}{8} \cdot \frac{1}{4} = \frac{3}{32}$$

$$P(BB) = \frac{3}{8} \cdot \frac{1}{4} = \frac{3}{32}$$

$$P(\text{win}) = \frac{1}{8} + \frac{3}{32} + \frac{3}{32} = \frac{10}{32} = 31.25\%$$

21.) Victoria is pretty good at math and has an 80% chance of getting any problem correct.

a) What is the probability that she will get at least two out of the first three questions on her test correct?

→ 3 right + all ways of getting 2 right!

$$P(RRR) + P(RWR) + P(RRW) + P(WRR)$$

$$(.8)(.8)(.8) + (.8)(.2)(.8) + (.8)(.8)(.2) + (.2)(.8)(.8) = 89.6\%$$

b) What is the probability that she will get the first three questions on her test wrong?

$$\frac{2}{10} \cdot \frac{2}{10} \cdot \frac{2}{10} = .8\%$$

22.) Consider a die-rolling game: A 6-sided die is rolled once, and your cash winnings depend on the number rolled. Rolling a 6 wins you \$30; rolling a 5 wins you \$20; rolling any other number results in no payout. Determine the expected value of this game.

$$\frac{2}{6} \cdot \$25 = \$8.33 \quad \$25$$

23.) An airline wants to determine if passengers not checking luggage is related to people being on business trips. Data for 1000 random passengers at an airport was collected and summarized in the table below.

	Checked Baggage	No Checked Baggage
Traveling for business	103	387
Not traveling for business	216	294

a) What is the probability of a passenger traveling for business and not checking baggage?

b) What is the probability of a passenger traveling for business or checking baggage?

24.) The length of a side of a square window in Jessica’s bedroom is represented by $2x - 1$. Write an expression that represents the area of the window.

25.) Multiply each of the following:

a) $(3x - 1)(4x + 5)$

b) $(2x - 7)(4x^2 + 5x - 3)$

26.) Factor each of the following completely:

a) $121x^3 - 11x^2$

b) $2x^2 + 11x - 6$

c) $4x^2 - 12x + 9$

d) $24x^2 + 22x + 10$

e) $8x^4 - 128$

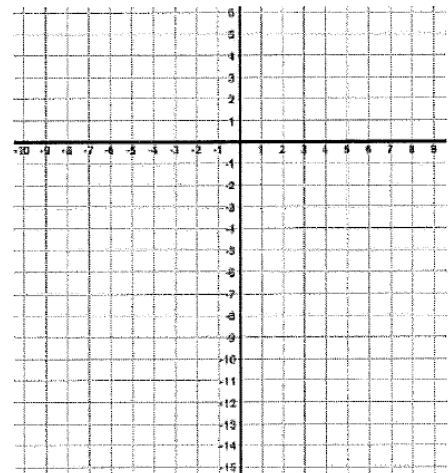
f) $3x^2 + 30x + 75$

$3(x^2 + 10x + 25)$
 $3(x + 5)(x + 5)$

27.) What is the exact equation for the quadratic modeled in the table below?

x	-4	-2	0	2	4	6
y	24	12	4	0	0	4

28.) Identify the x -intercepts, y -intercept, and vertex of $y = 3x^2 + 6x - 9$. Then graph and fully describe the parabola.



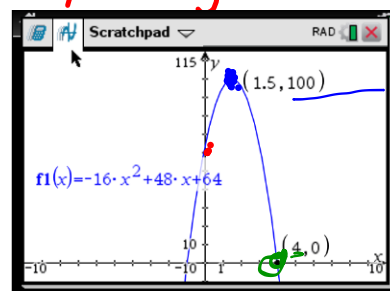
29.) A model rocket is launched vertically from a platform. The height the rocket reaches during the flight is modeled by $s(t) = -16t^2 + 48t + 64$ where s is the height of the rocket above the ground and t is the time in seconds since the launch.

- a) How high is the platform from which the rocket was launched? Explain how you know.
- b) What is the maximum height the rocket reaches?
- c) When does the rocket hit the ground?

64 ft. ← at time = 0, the height is 64.

100 ft.

4 sec.



30.) Given $y = 6 - 4x + 3x^2$. Solve for x when $y = 8$.

31.) Find the value that completes the square and then rewrite as a perfect square:

$$a^2 - 14a + \underline{\hspace{2cm}}$$

32.) Solve each of the following using either factoring/ZPP, completing the square, or quadratic formula:

a) $x^2 - 2x - 46 = -5$

b) $8x^2 - 55x = 7$

c) $2x^2 + 9x = 3$

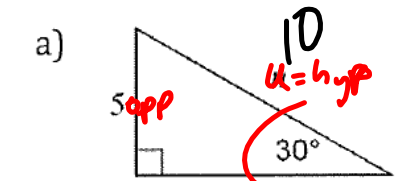
d) $x^2 = -7x$

33.) Simplify completely.

a) $(-2 + 4i) - (-5 - 7i)$

b) $(3 + 3i)(-6 - 8i)$

34.) Find the missing side lengths. Leave your answer in simple radical form.



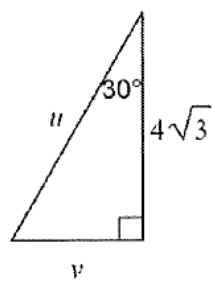
$\sin 30 = \frac{5}{u}$

$u = \frac{5}{\sin 30}$

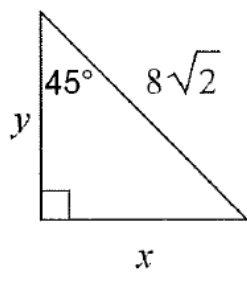
$u = 10$
 $v = 5\sqrt{3} = \sqrt{75}$

$5^2 + v^2 = 10^2$
 $25 + v^2 = 100$
 $v^2 = 75$
 $v = \sqrt{75}$

b)



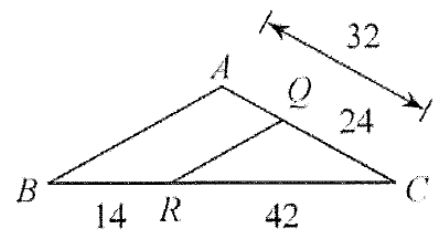
d)




35.) Given a square with an area of 25, determine the length of its diagonal exactly.


36.) Write in radical notation, then simplify: $(64)^{5/6}$


37.) Using the information given in the diagram, create a flowchart or two-column proof that shows $\triangle CBA \sim \triangle CRQ$.



38.) Write 3 different quadratic equations: 1 that has exactly 2 real solutions; 1 that has exactly 1 real solution; and 1 that has no real solution.

2 solutions:  $(x-2)(x+3)$

1 solution:  $(x-1)^2$

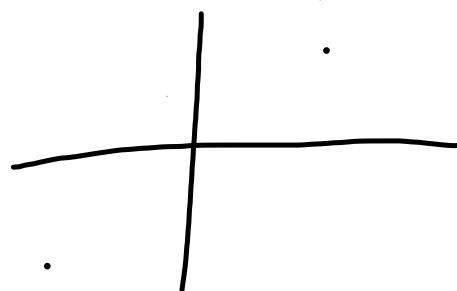
0 solution:  $x^2 + 2 = 0$ $\sqrt{x^2} = \sqrt{-2}$
 $-x^2 - 2$ $x = \pm\sqrt{2}i$

39.) Plot quadrilateral $A(-4,3)$, $B(2,3)$, $C(4,-5)$ and $D(-4,-5)$.

a. Determine all side lengths of the quadrilateral.

b. Find the measure of $\angle BCD$.

c. Explain how you know that quadrilateral $ABCD$ is a trapezoid, but is *NOT* an isosceles trapezoid.



VS.

