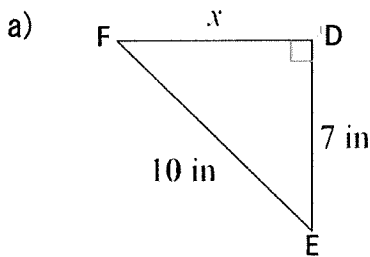


4.) Given isosceles triangle ABC with $AB = BC$. If $\angle A = 2x + 10$ and $\angle B = 6x - 20$, find $m\angle C$. 46°

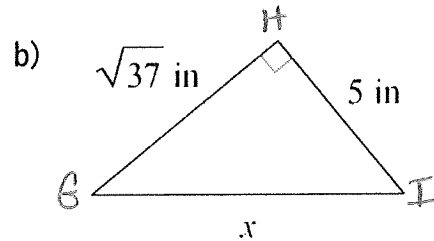
5.) State if the three numbers can be the measures of the sides of a triangle.

- a) 7, 7, and 11 Yes; $7 + 7 > 11$ b) 8, 17, and 9 No; $8 + 9 \not> 17$

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



$x = \sqrt{51}$



$x = \sqrt{62}$

- c) For the triangle in part (a), list the angles in order from greatest to least. $\angle D, \angle E, \angle F$
 d) For the triangle in part (b), list the angles in order from least to greatest. $\angle G, \angle I, \angle H$

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? 6.4 m

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

- a) Write 6 congruence statements. $\overline{AB} \cong \overline{FE}, \overline{BC} \cong \overline{ED}, \overline{AC} \cong \overline{FD}, \angle A \cong \angle F, \angle B \cong \angle E, \angle C \cong \angle D$

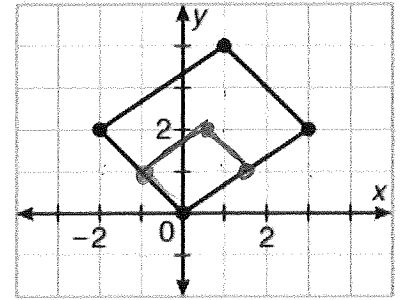
b) Does this mean that $\triangle ABC \sim \triangle FED$? Explain.

Yes; AA is enough for similarity.

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

Not necessarily; similar Δ s are the same shape but not always the same size. $\cong \Delta$ s are always same shape and size.

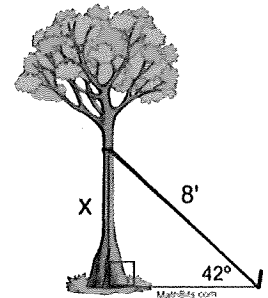
13.) A jeweler designs a setting that can hold a gem in the shape of a parallelogram. The figure shows the outline of the gem. The client, however, wants a set of smaller earrings made using the shape of this gem. Dilate the original pattern from the origin using a scale factor of $\frac{1}{2}$. What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



$(0,0), (1.5,1), (0.5,2), (-1,1)$

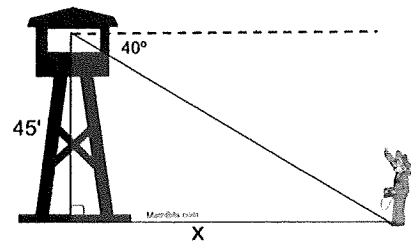
14.) What is the image of point $(4,-2)$ after a dilation of 3? $(12,-6)$

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.



≈ 5.4 feet

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?

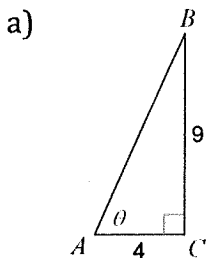


≈ 53.6 ft.

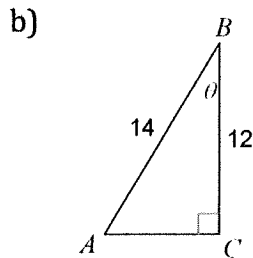
17.) Henry is flying a kite. The kite string makes an angle of 43° with the ground. If Henry is standing 100 feet from a point on the ground directly below the kite, find the length of the kite string.

≈ 136.7 ft.

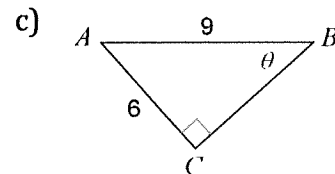
18.) Find the measure of each angle indicated. Round to the nearest tenth.



$\theta = 66^\circ$



$\theta = 31^\circ$



$\theta = 41.8^\circ$

25.) Multiply each of the following:

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

$12x^2 + 11x - 5$

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

$8x^3 - 18x^2 - 41x + 21$

26.) Factor each of the following completely:

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

$11x^2(11x-1)$

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

$(2x-1)(x+6)$

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

$(2x-3)^2$

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

$2(12x^2 + 11x + 5)$

e) $8x^4 - 128$

$8(x^2+4)(x-2)(x+2)$

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

$3(x+5)^2$

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

$y = \frac{1}{2}(x-2)(x-4)$

28.) Identify the x-intercepts, y-intercept, and vertex of

$y = 3x^2 + 6x - 9$. Then graph and fully describe the parabola.

Continuous, function

x-intercepts $(-3, 0)$ $(1, 0)$

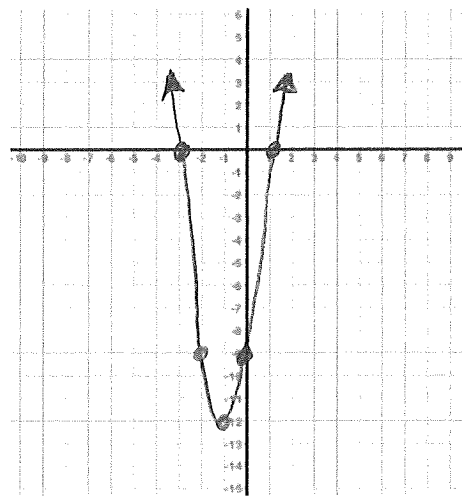
y-intercept $(0, -9)$

vertex $(-1, -12) \rightarrow$ minimum

line of symmetry $x = -1$

Domain $-\infty < x < \infty$

Range $y \geq -12$



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.

64 feet; Rocket launched at $t=0$ so $s(0) = 64$.

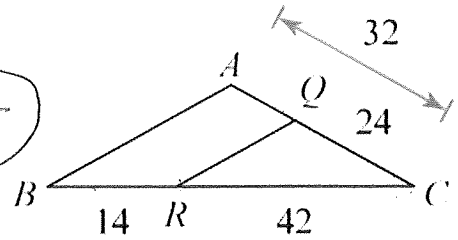
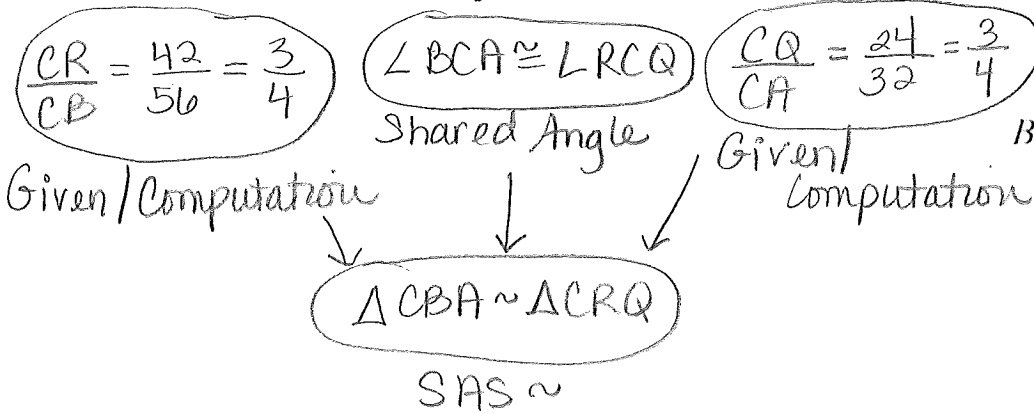
b) What is the maximum height the rocket reaches?

100 feet

c) When does the rocket hit the ground?

4 seconds

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 real solutions : $(x-1)^2 = 14$
 1 real solution : $(x-1)^2 = 0$
 0 real solutions : $(x-1)^2 = -14$

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

a. Determine all side lengths of the quadrilateral.

$AB = 6$; $AD = 8$; $CD = 8$; $BC = 2\sqrt{17}$

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

$\approx 76^\circ$

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

$\overline{AB} \parallel \overline{CD}$: one pair parallel sides
 $\overline{AD} \neq \overline{BC}$: legs are not \cong .