Algebra 1 **9.5 -9.6 Review** **Name** Key

Start with Question 1. Solve the problem, then look on the page for that answer, that question will be #2, write "2 in the question slot and solve that problem.

Question # 1 **Answer: 4.5 and -1.5**

Solve the problem by completing the square: $x^2+8x=20$

$x^2+8x+16=20+16$

$(x+4)^2=36$

$x+4=\pm 6$

$-4 \quad -4$

$x=-10$

$x=2$

Question # 6 **Answer: (2, -2)**

Find the number of real solutions the quadratic has. $x^2-6x+9=0$

b^2-4ac

$(6)^2-4(1)(9)=0$

1 solution

Question # 3 **Answer: 6 seconds**

Write the equation in vertex form: $y=x^2+10x-6$

$y=(x^2+10x+25)-6-25$

$y=(x+5)^2-31$

Question # 7 **Answer: 1 solution**

Solve the quadratic: $2x^2+3x=6$

$2x^2+3x-6=0$

$x=\frac{-3\pm\sqrt{3^2-4(2)(-6)}}{2(2)}=\frac{-3\pm\sqrt{57}}{4}$

Question # 4 **Answer: $y=(x+5)^2-31$**

Find the discriminant of $y=3x^2-5x+8$

b^2-4ac

$(-5)^2-4(3)(8)=-71$

Question # 5 **Answer: -71**

Complete the square to get the equation in vertex form and then state the vertex. $y = 2x^2 - 8x + 6$

$y = 2(x^2 - 4x + 4) + 6 - 2(4)$

$y = 2(x-2)^2 - 2$

vertex: $(2, -2)$

Question # 2 **Answer: 2 and -10**

Jason jumped off of a cliff into the ocean at Cascade lake on Orcas Island. His height as a function of time can be modeled by the function $h(t) = -16t^2 + 16t + 480$. After how many seconds, will Jason hit the water?

$x = \frac{-16 \pm \sqrt{16^2 - 4(-16)(480)}}{2(-16)} = \frac{-16 \pm \sqrt{30976}}{-32} = \frac{-16 \pm 176}{-32}$

$x = -5, 6$ ✓ 6 seconds

Question # 9 **Answer: 4 seconds**

Solve the quadratic by completing the square. $4x^2 - 12x = 27$

$4(x^2 - 3x + 2.25) = 27 + 4(2.25)$

$4(x-1.5)^2 = 36$

$\sqrt{(x-1.5)^2} = \sqrt{9}$

$x - 1.5 = \pm 3$

$x = 4.5$

$x = -1.5$

Question # 8 **Answer:** $\frac{-3 \pm \sqrt{57}}{4}$

A toy rocket is launched vertically from the ground with an initial velocity of 128 feet per second, then its height *h* after *t* seconds is given by the equation $h(t) = -16t^2 + 128t$. How long will it take the rocket to reach it's maximum height?

$h(t) = -16(t^2 - 8t + 16) - 16 \cdot 16$

$h(t) = -16(t-4)^2 - 256$

4 sec