

1). Solve for x using your calculator. Round your answer to the nearest hundredth.

$$15x^2 - 3x + 12 = -2x + 17.3 \quad x = -0.56, 0.63$$

Define the variable and write a quadratic equation to represent each situation below. Then you may solve using your calculator. Round all values to the nearest hundredth.

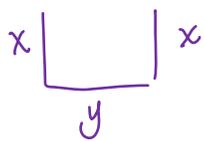
1) The Athletics Department has ordered water bottles to sell for the students at Hinsdale Central to promote Homecoming weekend in September. The total costs are $C(x) = 200 + 5x$ and total revenues are

$R(x) = 65x - x^2$. Using your calculator, how many water bottles must be sold for the department to break even?

$$65x - x^2 = 200 + 5x$$
$$x = 56.46, 3.54$$

Realistically - sell 57 water bottles.

2) Old MacDonald wants to build a rectangular corral for all of his animals next to his house. When building the corral, he plans to use y feet of fence for the side parallel to the house and x feet for each of the two sides of the fence perpendicular to the house. The total length of the fence is to be 58 feet. If the area of the corral is 224 square feet, what are the dimensions?



$$2x + y = 58$$
$$x \cdot y = 224$$

$$x(58 - 2x) = 224$$

$$x = 24.41, 4.59$$

$$24.41 \times 9.18 \text{ OR } 4.59 \times 48.80$$

3) The CEO of Baskin Robbins has decided to shut down his store if she cannot produce revenue of at least \$430 per day. The daily price demand equation for ice cream sundaes at the Baskin Robbins in Westmont is

$q = 220 - 3.5x$ where x is the price per smoothie and q is the number of smoothies sold per day at that location. How many sundaes does this store need to sell per day in order to stay open for business?

$$x(220 - 3.5x) = 430$$
$$x = 2.02, 60.84$$

Either 213 @ \$2.02
or 8 @ \$60.84
more likely

4) Otter Oar has decided to start a rowing team at Hinsdale Central with his friends. During the first practice, it took Otter and his friends 1.6 hours longer to go 8 miles up the Fox River than it did to return. If the rate of the current is 1.3 miles per hour, what is the speed of the boat in still water?

| | | | | |
|------|---------|---------|------|-----------------------------|
| | rate | time | dist | $(x-1.3)(y+1.6) = 8$ |
| up | $x-1.3$ | $y+1.6$ | 8 | $y = \frac{8}{x-1.3} - 1.6$ |
| down | $x+1.3$ | y | 8 | $(x+1.3)y = 8$ |
| | | | | $y = \frac{8}{x+1.3}$ |

3.83 mph

5) Cruella deVil is at it again and Spotty, your dalmatian, has gone missing! You are so distraught that you send out two search planes to look for it. Two planes leave O'Hare Airport at 8 p.m. One plane travels due south at 180 miles per hour while the other plane travels due west at 220 miles per hour. The planes carry radios with a maximum range of 340 miles. To the nearest minute, when will these planes no longer be able to communicate with each other?

$(9x)^2 + (11x)^2 = 17^2$

$202x^2 = 289$

$x^2 = 1.43$

$x = 1.20$

1 hour, 12 minutes