Before we begin, are there any questions from last day's work?

From 2 days ago: 6.5_1 (Day 1) pp. 300-301 #3bce, 4c, 6, 9bd
Solutions posted on website! p. 300 (top) #C2
(With additional example)

From Last day: pp. 312-313 #4, 5, 6, 9, 11, 13
***Enrichment*:** pp. 455-457 #39, 41, 54, 53a

Do 3-minute WARM-UP

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) recognize when a problem can be modelled by a quadratic *relation*.
b) solve problems involving quadratic *relations* and quadratic equations.

p.312 #4

Let x represent the first consecutive number.

$x+1$

$$x(x+1)=3306$$
$$x^2+x-3306=0$$
$$(x-57)(x+58)=0$$
$$\therefore x=57 \text{ or } x=-58$$

if $x=57$

$x+1=58$

$\therefore$ the numbers are $57+58$

if $x=-58$

$x+1=-57$

or the numbers are $-58+-57$.

#5 Let x represent the first consecutive odd number.

$x+2$

$$x(x+2)=323$$
$$x^2+2x-323=0$$
$$(x+19)(x-17)=0$$
$$\therefore x=-19 \text{ or } x=17$$

$x+2=-17$

then $x+2=19$

3-minute WARM-UP:

Solve for x: $3x^2 + 2x = 5$

$3x^2+2x-5=0$

$a=3 \quad b=2 \quad c=-5$

$$x=\frac{-(2)\pm\sqrt{(2)^2-4(3)(-5)}}{2(3)}$$

$$=\frac{-2\pm\sqrt{4+60}}{6}$$

$$=\frac{-2\pm\sqrt{64}}{6}$$

$$x=\frac{-2+\sqrt{64}}{6} \text{ or } x=\frac{-2-\sqrt{64}}{6}$$

$$=\frac{-2+8}{6} \qquad =\frac{-2-8}{6}$$

$$=\frac{6}{6} \qquad =\frac{-10}{6}$$

$$=1 \qquad =\frac{-5}{3}$$

$(3x+5)(x-1)=0$

$\therefore 3x+5=0$ or $x-1=0$

$3x=-5$ $\quad x=1$

$x=\frac{-5}{3}$

$x=1$ or $x=\frac{-5}{3}$

$x-1=0 \quad 3x=-5$

$3x+5=0$

$(x-1)(3x+5)=0$

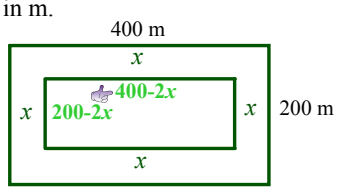
MPM 2DI 6.5 Solve Problems Using Quadratic Equations (Day2) Date: May 18/16

"Word Problems" (Day Two)

Ex. 1

A rectangular park measures 400 m by 200 m.
Dan is mowing the field in a spiral pattern, starting from the outside and working in towards the center.
After an hour of work, 75% of the field is left uncut.
What is the size of the ring cut around the outside, to the nearest hundredth of a metre?
(Include a diagram.)

- Let x represent the width of the ring of the cut grass, in m.



- $\text{Area}_{\text{field}} = 400 \times 200$
  $= 80\,000 \text{ m}^2$
- $\text{Area}_{\text{uncut}} = 0.75 \times 80\,000$
  $= 60\,000 \text{ m}^2$
- $\text{Area}_{\text{uncut}} = (400-2x)(200-2x)$

$60000 = 80000 - 800x - 400x + 4x^2$

$60000 = 4x^2 - 1200x + 80000$

$0 = 4x^2 - 1200x + 80000 - 60000$

$0 = 4x^2 - 1200x + 20000$

$0 = 4(x^2 - 300x + 5000)$

$a = 1 \quad b = -300 \quad c = 5000$

$a = 4 \quad b = -1200 \quad c = 20000$

$$x = \frac{-(-1200) \pm \sqrt{(-1200)^2 - 4(4)(20000)}}{2(4)}$$

$$= \frac{1200 \pm \sqrt{1\,120\,000}}{8}$$

$$x = \frac{1200 + \sqrt{1\,120\,000}}{8} \quad \text{or} \quad x = \frac{1200 - \sqrt{1\,120\,000}}{8}$$

$\doteq 292.287$
$\doteq 282.29$

if $x = 282.29$
$\ell = 400 - 2x$
$= 400 - 2(282.29)$
$= -164.58$
$\therefore$ inadmissible

$\doteq 17.712$
$\doteq 17.71$

if $x = 17.71$
then length $= 400 - 2x$
$= 400 - 2(17.71)$
$= 400 - 35.42$
$= 364.58$

$\therefore$ the width of the strip is 17.71 m

282.29 m or 17.71 m

Today's entertainment: **READ p. 307** Example 2 Width of a Path
pp. 313-314 #18, 19, 21, 22
***Enrichment*:** pp. 452-453 #22, 30

Attachments

PopGoestheWeasel.mid