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

READ p. 307 Example 2 Width of a Path

pp. 313-314 #18, 19, 21, 22

Enrichment: pp. 452-453 #22, 30

Today's Learning Goal(s):

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

a) consolidate understanding of quadratic relations and equations and be prepared for the Unit 6 Summative.

Today's practice:

Remember: **to find the roots means to solve for the *x*-intercepts.**

To solve for the *x*-intercepts, ALWAYS try to factor the equation first,

before trying the Quadratic Formula.

pp. 318-319 #1b, 2, 4bd, 5abd, 6acfg, 8, 9a, 13, 16*no rounding, 17

p. 317 #13

Find dimensions.

p.313

18
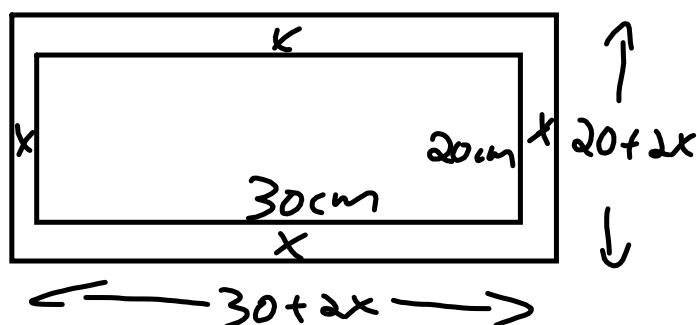
$$A_{New} = (30+2x)(20+2x) \qquad A_{New} = 1064$$

Let $30+2x$ represent the new length in cm.

Let $20+2x$ represent the new width in cm.

$$(30+2x)(20+2x) = 1064$$

$$600 + 60x + 40x + 4x^2 = 1064$$

$$4x^2 + 100x - 464 = 0$$

$$4(x^2 + 25x - 116) = 0$$

$$4(x+29)(x-4) = 0$$

$$\therefore x = -29 \text{ or } x = 4$$

1	116
2	58
4	29

$$\therefore \ell = 30+2x \qquad w = 20+2x$$

$$= 30+2(4) \qquad = 20+2(4)$$

$$= 38 \qquad\qquad = 28$$

$\therefore$ the new dimensions are 38 cm by 28 cm.

or using the formula:

$$a = 1 \qquad b = 25 \qquad c = -116$$

$$x = \frac{-25 \pm \sqrt{(25)^2 - 4(1)(-116)}}{2(1)}$$

$$= \frac{-25 \pm \sqrt{1089}}{2}$$

$$= \frac{-25 \pm 33}{2}$$

$$x = \frac{-25 + 33}{2} \qquad\qquad x = \frac{-58}{2}$$

$$= \frac{8}{2} \qquad\qquad\qquad = -29$$

$$= 4$$

p.313

19

Find dimensions.

$A_{original} = 24 \times 15$
$= 360 \, cm^2$

$A_{New} = 1.5 \times 360$
$= 540 \, cm^2$
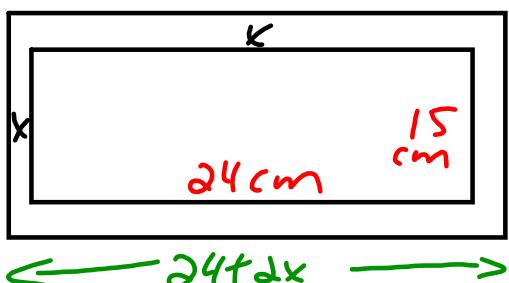
$A_{New} = (24 + 2x)(15 + 2x)$

Let $24 + 2x$ represent the new length in cm.

Let $15 + 2x$ represent the new width in cm.

$(24 + 2x)(15 + 2x) = 540$

$360 + 48x + 30x + 4x^2 - 540 = 0$

$4x^2 + 78x - 180 = 0$

$2(2x^2 + 39x - 90) = 0$

$a = 2 \quad b = 39 \quad c = -90$

$x = \dfrac{-39 \pm \sqrt{(39)^2 - 4(2)(-90)}}{2(2)}$

$= \dfrac{-39 \pm \sqrt{2241}}{4}$

$x \doteq 2.08 \quad or \quad x \doteq -21.58$
$\doteq 2.1 \qquad\qquad$ inadmissible

$l = 24 + 2(2.1) \qquad w = 15 + 2(2.1)$
$= 28.2 \qquad\qquad\quad = 19.2$

∴ the new dimensions are 28.2 cm by 19.2 cm.

p.314
21
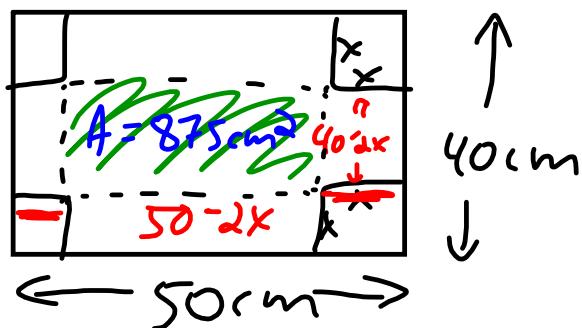
Let x represent the length of the square in cm.

$$(50-2x)(40-2x) = 875$$

$$2000 - 100x - 80x + 4x^2 = 875$$

$$4x^2 - 180x + 1125 = 0$$

$$a=4 \quad b=-180 \quad c=1125$$

$$x = \frac{-(-180) \pm \sqrt{(-180)^2 - 4(4)(1125)}}{2(4)}$$

$$= \frac{180 \pm \sqrt{14400}}{8}$$

$$= \frac{180 \pm 120}{8}$$

$$x = \frac{300}{8} \qquad x = \frac{60}{8}$$

$$= 37.5 \qquad = 7.5$$

if $\ell = 50-2x$
$= 50-2(37.5)$
inadmissible

$\ell = 50-2(7.5) \quad w = 40-2(7.5)$
$\quad = 35 \qquad\qquad = 25$

c) $V = \ell w h$
$= (35)(25)(7.5)$
$= 6562.5 \, cm^3$

b) $7.5 \, cm$ must be removed from each corner.

p.314

22

Find dimensions.

$A_{original} =$

$=$

$A_{New} = 216 \text{ cm}^2$

15 cm

21 cm

(diagram: rectangle with outer dimensions, inner labels x, $15-2x$, $21-2x$)
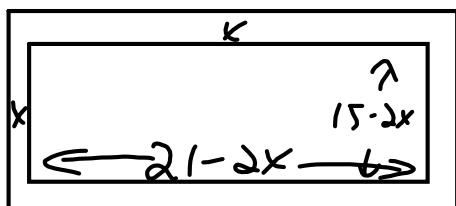
Let x represent the width of the cut in cm.

$A_{New} = (21-2x)(15-2x)$

$$(21-2x)(15-2x) = 216$$

$$315 - 42x - 30x + 4x^2 - 216 = 0$$

$$4x^2 - 72x + 99 = 0$$

$$x = \frac{-(-72) \pm \sqrt{(-72)^2 - 4(4)(99)}}{2(4)}$$

$$= \frac{72 \pm \sqrt{5184 - 1584}}{8}$$

$$= \frac{72 \pm \sqrt{3600}}{8}$$

$$= \frac{72 \pm 60}{8}$$

$x = \frac{72+60}{8}$ or $x = \frac{72-60}{8}$

$= \frac{132}{8}$ $= \frac{12}{8}$

$= 16.5$ $= 1.5$

inadmissible   ∴ the width of the cut is 1.5 cm

p.318

6c)　$4m^2 - 10 = 0$

$a = 4$　$b = 0$　$c = -10$

$\Rightarrow$　$4m^2 = 10$

$m^2 = \dfrac{10}{4}$

$m^2 = \dfrac{5}{2}$

$m = \pm\sqrt{\dfrac{5}{2}}$

Attachments

PopGoestheWeasel.mid