

Unit 5 Review

② pg 305.

3.

a) $y = x^2 + 6x + 5$

x-intercept $y = 0$

$$0 = x^2 + 6x + 5$$

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

$$x+5=0$$

$$x = -5$$

$$(-5, 0)$$

$$x+1=0$$

$$x = -1$$

$$(-1, 0)$$

Vertex at

$$x = \frac{-5 + -1}{2}$$

$$x = -3$$

$$y = (-3)^2 + 6(-3) + 5$$

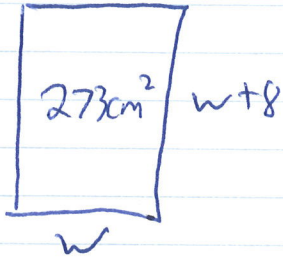
$$y = 9 - 18 + 5$$

$$y = -4$$

$$\text{Vertex } (-3, -4)$$

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6.



$$A = w(w+8)$$

$$273 = w^2 + 8w$$

$$w^2 + 8w - 273 = 0$$

$$w = \frac{-8 \pm \sqrt{8^2 - 4(-273)}}{2}$$

$$w = \frac{-8 \pm \sqrt{1156}}{2}$$

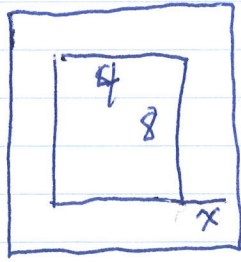
$$w = \frac{-8 \pm 34}{2}$$

$$w = \cancel{-21} \quad \text{or} \quad w = 13$$

∴ dimensions are 13 by 21 cm.

Py 305

7.



$$A = (2x+8)(2x+4)$$

$$165 = (2x+8)(2x+4)$$

$$165 = 4x^2 + 8x + 16x + 32$$

$$4x^2 + 24x - 133 = 0$$

$$x = \frac{-24 \pm \sqrt{24^2 - 4(4)(-133)}}{2(4)}$$

$$x = \frac{-24 \pm \sqrt{2704}}{8}$$

$$x = -\cancel{9.5} \quad \text{or} \quad x = 3.5$$

∴ Flower bed is 3.5m. wide.

3. Solve by completing the square.

a) $x^2 + 8x - 1 = 0$

$$x^2 + 8x = 1$$

$$x^2 + 8x + 16 = 1 + 16$$

$$(x+4)^2 = 17$$

$$x+4 = \pm\sqrt{17}$$

$$x = -4 \pm \sqrt{17}$$

b) $2x^2 + 16x = 7$

$$2(x^2 + 8x) = 7$$

$$2(x^2 + 8x + 16 - 16) = 7$$

$$2[(x+4)^2 - 16] = 7$$

$$(x+4)^2 - 16 = \frac{7}{2}$$

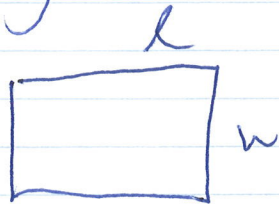
$$(x+4)^2 = \frac{7}{2} + 16$$

$$(x+4)^2 = \frac{39}{2}$$

$$x+4 = \pm\sqrt{\frac{39}{2}}$$

$$x = -4 \pm \sqrt{\frac{39}{2}}$$

4. py 304 #10



$$A = 120 \text{ cm}^2$$

$$\textcircled{1} 120 = lw$$

$$\textcircled{2} 2l + 2w = 46$$

$$\rightarrow 2l = 46 - 2w$$

$$l = 23 - w$$

sub $\textcircled{2}$ into $\textcircled{1}$

$$120 = (23 - w)w$$

$$120 = 23w - w^2$$

$$w^2 - 23w + 120 = 0$$

$$(w - 8)(w - 15) = 0$$

$$w - 8 = 0 \quad \text{or} \quad w - 15 = 0$$

$$w = 8$$

$$w = 15$$

$$\downarrow$$
$$l = 23 - 8$$

$$l = 15$$

∴ rectangle is 15 cm by 8 cm.

5.

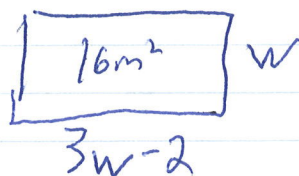
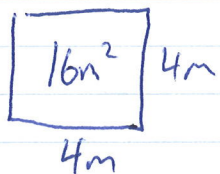
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$$16. x^2 + 10x = 0$$

$$x(x+10) = 0$$

$$x = 0 \quad \text{or} \quad x = -10$$

21.



$$w(3w-2) = 16$$

$$3w^2 - 2w = 16$$

$$3w^2 - 2w - 16 = 0$$

$$(3w-8)(w+2) = 0$$

$$3w-8=0$$

$$w+2=0$$

$$3w=8$$

$$w=-2$$

$$w = \frac{8}{3} \text{ m}$$

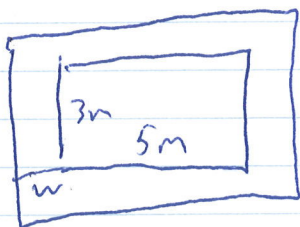
↳ and length is $3\left(\frac{8}{3}\right) - 2$

$$= 8 - 2$$

$$= 6 \text{ m.}$$

~~18~~

26.



$$24 = (2w+5)(2w+3)$$

$$24 = 4w^2 + 6w + 10w + 15$$

$$4w^2 + 16w - 9 = 0$$

$$(2w+9)(2w-1) = 0$$

$$2w+9=0$$

$$w = -\frac{9}{2}$$

$$2w-1=0$$

$$w = \frac{1}{2}$$