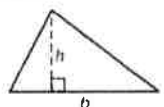
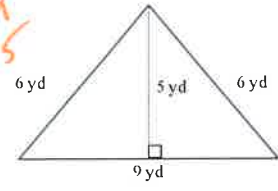
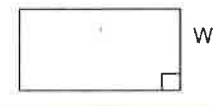
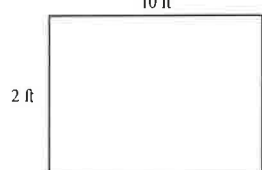
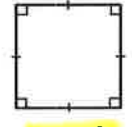
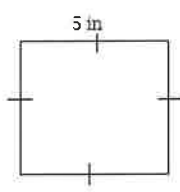
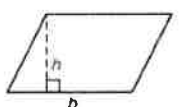
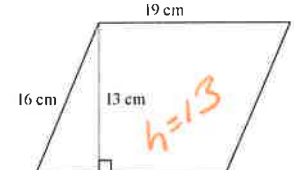
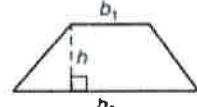
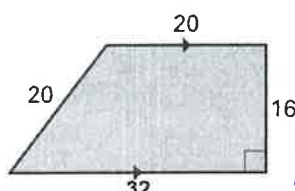
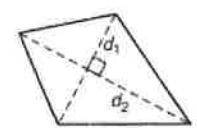
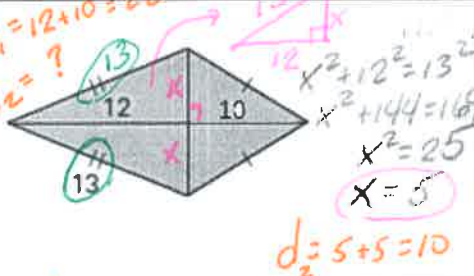
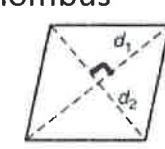
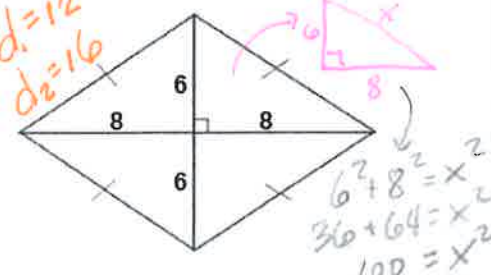


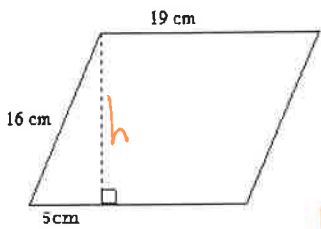
11.2 Notes: Area & Perimeter of (non-regular) Polygons

Perimeter (P) - sum of all sides

Area Formula	Example	Perimeter	Area
<p>Triangle</p>  <p>$A = \frac{1}{2}bh$ or $\frac{bh}{2}$</p>	<p>$b=9$ $h=5$</p>  <p>Diagram not to scale.</p>	<p>$P = 6 + 9 + 6$ $= 21 \text{ yds}$</p>	<p>$A_{\Delta} = \frac{1}{2}(9)(5)$ or $\frac{(9)(5)}{2}$ $= 22.5 \text{ yds}^2$</p>
<p>Rectangle</p>  <p>$A = LW$ or bh</p>		<p>$P = 10 + 2 + 10 + 2$ $= 24 \text{ ft}$ or $2(10+2) =$</p>	<p>$A_{\text{rect}} = 10(2)$ $= 20 \text{ ft}^2$</p>
<p>Square</p>  <p>$A = s^2$</p>		<p>$P = 5 + 5 + 5 + 5$ or $5(4)$ $= 20 \text{ in}$</p>	<p>$A_{\text{square}} = 5^2$ $= 25 \text{ in}^2$</p>
<p>Parallelogram</p>  <p>$A = bh$</p>		<p>$P = 19 + 16 + 19 + 16$ or $2(19+16)$ $= 70 \text{ cm}$</p>	<p>$A_{\square} = 19(13)$ $= 247 \text{ cm}^2$</p>
<p>Trapezoid</p>  <p>$A = \frac{1}{2}(b_1 + b_2)h$</p>		<p>$P = 20 + 22 + 16 + 32$ $= 88 \text{ units}$</p>	<p>$A = \frac{1}{2}(20+32)16$ trap or $= \frac{20+32}{2} \cdot 16$ $= 416 \text{ units}^2$</p>
<p>Kite</p>  <p>$A = \frac{1}{2}d_1d_2$</p>	 <p>$d_1 = 12 + 10 = 22$ $d_2 = ?$ $12^2 + 12^2 = 13^2$ $x^2 + 144 = 169$ $x^2 = 25$ $x = 5$ $d_2 = 5 + 5 = 10$</p>	<p>$P = 13 + 13 + 5\sqrt{5} + 5\sqrt{5}$ $= 26 + 10\sqrt{5} \approx 48.36 \text{ units}$</p>	<p>$A_{\text{kite}} = \frac{1}{2}(22)(10)$ $= 110 \text{ units}^2$</p>
<p>Rhombus</p>  <p>$A = \frac{1}{2}d_1d_2$</p>	 <p>$d_1 = 12$ $d_2 = 16$ $6^2 + 8^2 = x^2$ $36 + 64 = x^2$ $100 = x^2$ $x = 10$</p>	<p>$P = 10 + 10 + 10 + 10$ or $4(10)$ $= 40 \text{ units}$</p>	<p>$A_{\text{rhombus}} = \frac{1}{2}(12)(16)$ $= 96 \text{ units}^2$</p>

More examples:

Ex. 1 Find the perimeter and the area of the parallelogram:



Use Pythagorean theorem to find h.

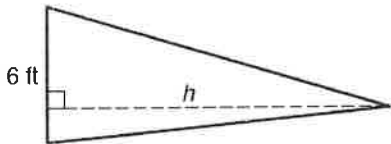


$$\begin{aligned} h^2 + 5^2 &= 16^2 \\ h^2 + 25 &= 256 \\ h^2 &= 231 \\ h &= \sqrt{231} \end{aligned}$$

$$\begin{aligned} P &= 19 + 16 + 19 + 16 \\ P &= 70 \text{ cm} \end{aligned}$$

$$A = bh = 19\sqrt{231}$$

Ex. 2 Find the height of the triangle given if, the $A = 90 \text{ ft}^2$



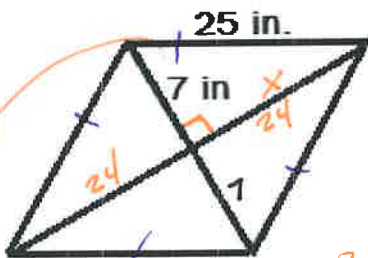
$$\left. \begin{aligned} A &= \frac{bh}{2} \\ A &= 90 \end{aligned} \right\} \rightarrow \frac{bh}{2} = 90$$

$$\frac{6h}{2} = 90$$

$$6h = 180$$

$$h = 30$$

Ex. 3 Find the perimeter and area of the rhombus



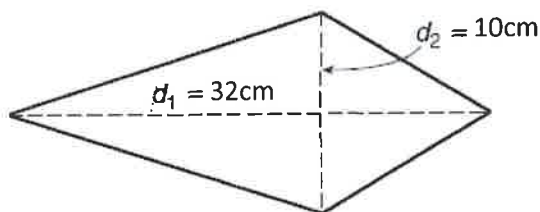
$$\begin{aligned} P &= 25 + 25 + 25 + 25 \\ &\text{or } 4(25) \\ &= 100 \text{ inches} \end{aligned}$$

$$\begin{aligned} A &= \frac{1}{2}(14)(48) \\ &= 336 \text{ in}^2 \end{aligned}$$

$$\begin{aligned} x^2 + 7^2 &= 25^2 \\ x^2 + 49 &= 625 \\ x^2 &= 576 \end{aligned}$$

$$\begin{aligned} x &= \sqrt{576} \\ &= 24 \end{aligned} \rightarrow \begin{aligned} d_1 &= 14 \\ d_2 &= 48 \end{aligned}$$

Ex. 4 Find the area of the kite



$$\begin{aligned} A &= \frac{1}{2}d_1d_2 \\ &= \frac{1}{2}(32)(10) \\ &= 160 \text{ cm}^2 \end{aligned}$$