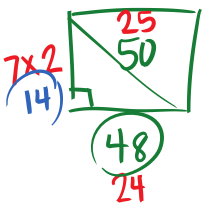


Formula Box: Fill-in the formulas below and make sure you know them from this moment on!

- Area of a Rectangle: $A = b \cdot h$ Area of a Parallelogram: $A = b \cdot h$
- Area of a Square: $A = S^2$ or $A = \frac{d_1 \cdot d_2}{2}$ Area of a Triangle: $A = \frac{b \cdot h}{2}$
- Area of a Trapezoid: $A = \frac{b_1 + b_2}{2} \cdot h$ or $A = Mh$ Median of a Trapezoid: $M = \frac{b_1 + b_2}{2}$
- Area of a Rhombus: $A = b \cdot h$ or $A = \frac{d_1 \cdot d_2}{2}$ Area of a Kite: $A = \frac{d_1 \cdot d_2}{2}$
- Area of an Equilateral Triangle: $A = \frac{S^2 \sqrt{3}}{4}$ Area of a Regular Polygon: $A = \frac{1}{2} a p$
- Area of a Circle: $A = \pi r^2$ Circumference of a Circle: $C = 2\pi r$ or $C = \pi d$

Please show **ALL** work. Leave all answers as **exact answers** (no decimals!) and provide the appropriate **units** for each problem! **DRAW** the picture if it is not provided.

1. Find the area of a rectangle with a diagonal of 50 in and a base of 48 in.

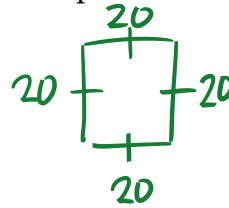


$$A = b \cdot h$$

$$A = 48 \cdot 14$$

$$A = 672 \text{ in}^2$$

2. Find the area of a square that has a perimeter of 80 feet.

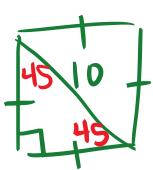


$$A = S^2$$

$$A = (20)^2$$

$$A = 400 \text{ ft}^2$$

3. Find the area of the square with a diagonal that measures 10 cm.



$$A = \frac{d_1 \cdot d_2}{2}$$

$$A = \frac{10 \cdot 10}{2}$$

$$A = 50 \text{ cm}^2$$

$$x\sqrt{2} = 10$$

$$x = \frac{10 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}}$$

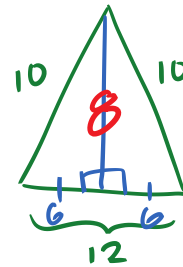
$$x = 5\sqrt{2}$$

$$A = S^2$$

$$A = (5\sqrt{2})(5\sqrt{2})$$

$$A = 50 \text{ cm}^2$$

4. Find the area of a triangle with side lengths 10 in., 10 in., and 12 in..



$$A = \frac{b \cdot h}{2}$$

$$A = \frac{12 \cdot 8}{2}$$

$$A = 48 \text{ in}^2$$

5. A parallelogram has an area of $60x^2 \text{ cm}^2$ and a base of $15x \text{ cm}$. Find the measure of the height of the parallelogram.

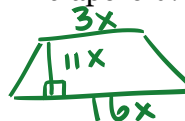
$$A = b \cdot h$$

$$60x^2 = 15x \cdot h$$

$$\frac{60x^2}{15x} = \frac{15x \cdot h}{15x}$$

$$h = 4x \text{ cm}$$

6. A trapezoid has bases with measures of $3x \text{ in}$ and $16x \text{ in}$., and a height of $11x \text{ in}$. Find the area of the trapezoid.



$$A = \frac{b_1 + b_2}{2} \cdot h$$

$$A = \frac{(3x + 16x)}{2} \cdot 11x$$

$$A = \frac{19x}{2} \cdot 11x = \frac{209x^2}{2} \text{ in}^2$$

7. A trapezoid has an area of 720 ft², a height of 10 ft., and a base of 50 ft. Find the measure of the other base.

$$A = \frac{b_1 + b_2}{2} \cdot h \text{ so } 720 = \frac{50 + b_2}{2} \cdot 10$$

$$\frac{720}{5} = \frac{(50 + b_2)5}{5}$$

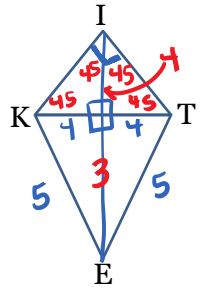
$$144 = 50 + b_2 \quad (b_2 = 94 \text{ ft})$$

8. Find the area of the kite given R KIT is a right angle, KT = 8 and KE = 5.

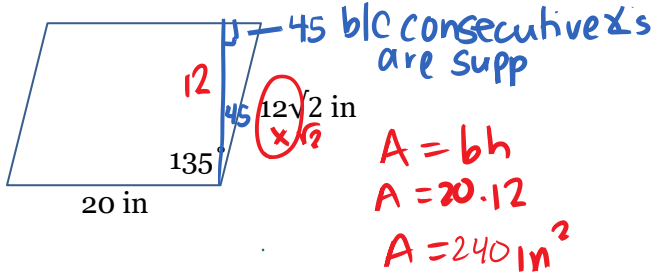
$$A = \frac{d_1 \cdot d_2}{2}$$

$$A = \frac{8 \cdot 7}{2}$$

$$A = 28 \text{ u}^2$$



9. Find the area of the parallelogram below.

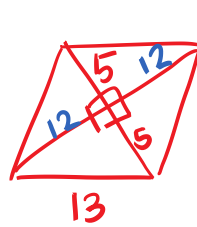


$$A = bh$$

$$A = 20 \cdot 12$$

$$A = 240 \text{ in}^2$$

10. Find the height of a rhombus with a side of 13 and the shorter diagonal is 10 mi.

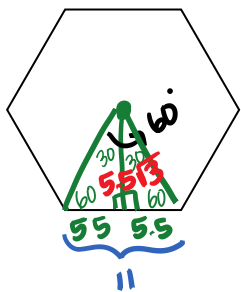


$$\text{1st } A = \frac{d_1 \cdot d_2}{2} \quad \text{2nd } A = bh$$

$$A = \frac{10 \cdot 24}{2} \quad 120 = 13 \cdot h$$

$$A = 120 \text{ mi}^2 \quad (h = \frac{120 \text{ mi}}{13})$$

12. Find the area of a regular polygon if each side is 11 cm.



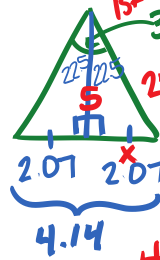
$$\text{1st central } \angle = \frac{360}{6} = 60^\circ$$

$$A = \frac{1}{2} ap$$

$$A = \frac{1}{2} \cdot 5.5\sqrt{3} \cdot 11$$

$$A = 181.5\sqrt{3} \text{ cm}^2$$

13. Find the area of a regular octagon if the length of the apothem is 5 in.



$$\frac{360}{8} = 45^\circ$$

$$\text{2nd } \tan(22.5) = \frac{x}{5}$$

$$x = 5 \tan(22.5)$$

$$x \approx 2.07$$

$$\text{4th } A = \frac{1}{2} ap \text{ so } A = \frac{1}{2} (5)(33.12)$$

$$\text{3rd } p = 4.14 \times 8 = 33.12 \quad A = 82.8 \text{ in}^2$$

16. Find the area of a circle if its circumference is 16π

$$\text{1st } C = 2\pi r$$

$$\frac{16\pi}{2\pi} = \frac{2\pi r}{2\pi}$$

$$8 = r$$

$$\text{2nd } A = \pi r^2$$

$$A = \pi (8)^2$$

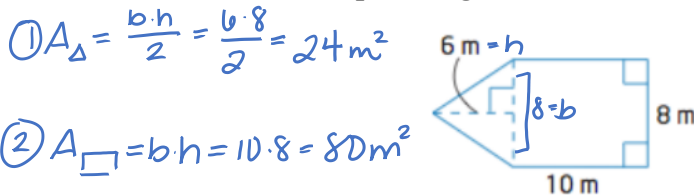
$$A = 64\pi \text{ u}^2$$

17. Find the circumference and diameter if the radius of the circle is 14x.

$$D = 2(14x) = 28x \text{ units}$$

$$C = \pi d \text{ so } C = 28x\pi \text{ units}$$

18. Find the area of the composite figure below.



$$\text{① } A_{\Delta} = \frac{b \cdot h}{2} = \frac{10 \cdot 6}{2} = 30 \text{ m}^2$$

$$\text{② } A_{\square} = b \cdot h = 10 \cdot 8 = 80 \text{ m}^2$$

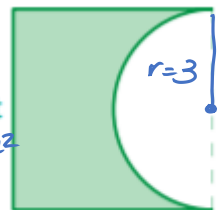
$$\text{③ Total Area} = 30 + 80 = 110 \text{ m}^2$$

19. Find the area of the shaded region below.

$$\text{① } A_{\square} = s^2 = 6^2 = 36 \text{ ft}^2$$

$$\text{② } A_{\text{semi circle}} = \frac{\pi r^2}{2} = \frac{\pi (3)^2}{2} = \frac{9}{2} \pi \text{ ft}^2$$

$$\text{③ Total } A = A_{\square} - A_{\text{semi}} = 36 - \frac{9}{2} \pi \text{ ft}^2$$



18. Rate your area skills! F (Grr...) D (Ahhh!!!)

C (I'm okay?)

B (I'm good!)

A (I got this!!!)