MTH1W

Math 9 – Unit 4: Measurement Name: Mr. Hagen

Lesson #4.1: Perimeter and Area of 2D Figures Date: Oct 18, 2021

Learning Goal: We are learning to calculate the perimeter, circumference, and area for common 2D simple and compound shapes.

Important Formulas

Perimeter – simply add up all the outside edges, regardless of the shape (not circles!)

Area of a square/rectangle: $A = lw$

Area of a triangle: $A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$

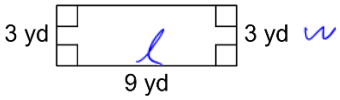
Area of a trapezoid: $A = \frac{(a+b)h}{2}$

Area of a circle: $A = \pi r^2$ (pi = 3.14)

Circumference of a circle: $C = 2\pi r$

Find the perimeter (if possible) and area of each shape.

1.



$P = 2w + 2l$

$P = 2(3) + 2(9)$

$P = 6 + 18$

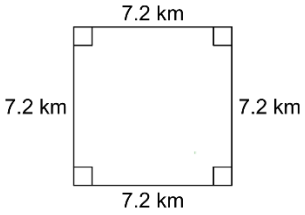
$P = 24\,yd$

$A = lw$

$A = (9)(3)$

$A = 27\,yd^2$

2.



$P = 4s$

$P = 4(7.2)$

$P = 28.8\,km$

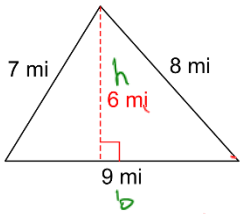
$A = lw$ or $A = s^2$

$A = (7.2)(7.2)$

$A = 51.84\,km^2$

MTH1W

3.



$P = 7 + 8 + 9$

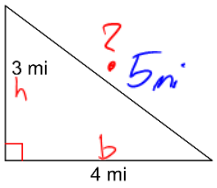
$P = 24\,mi$

$A = \frac{bh}{2}$

$A = \frac{(9)(6)}{2}$

$A = 27\,mi^2$

4.



$a^2 + b^2 = c^2$

$3^2 + 4^2 = c^2$

$9 + 16 = c^2$

$\sqrt{25} = \sqrt{c^2}$

$5 = c$

$P = 3 + 4 + 5$

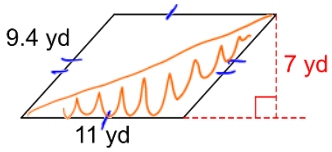
$P = 12\,mi$

$A = \frac{bh}{2}$

$A = \frac{(3)(4)}{2}$

$A = 6\,mi^2$

5.



Parallelogram

$P = 2(11) + 2(9.4)$

$P = 22 + 18.8$

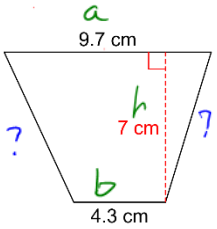
$P = 40.8\,yd$

$A = bh$

$A = (11)(7)$

$A = 77\,yd^2$

6.



P = not enough information.

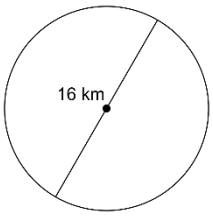
$A = \frac{(a+b)h}{2}$

$A = \frac{(9.7+4.3)(7)}{2}$

$A = \frac{(14)(7)}{2} = 49\,cm^2$

Find the circumference and the area of each circle.

7.



$d = 16\,km$

$r = 8\,km$

$C = 2\pi r$

$C = 2(3.14)(8)$

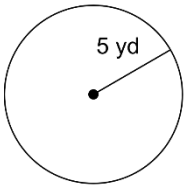
$C = 50.24\,km$

$A = \pi r^2$

$A = (3.14)(8^2)$ (64)

$A = 200.96\,km^2$

8.



MTH1W

Use the appropriate formula to find the missing piece.

9. A triangle has a height of 22*cm* and an area of 143cm^2. What is the length of the base?

$A = \frac{bh}{2}$

$143 = \frac{b(22)}{2}$

$\frac{143}{11} = \frac{b(11)}{11}$

$13cm = b$

10. A large pizza has an area of 201in^2. What is the diameter, in inches, of the pizza.

$A = \pi r^2$

$\frac{201}{3.14} = \frac{(3.14)r^2}{3.14}$

$\sqrt{64.01} = \sqrt{r^2}$

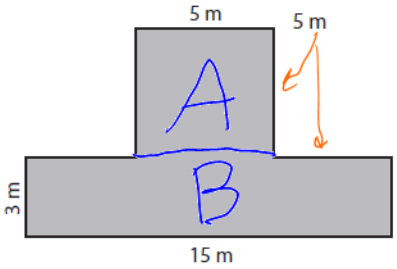
$8 = r$

$16in = d$

$3.14(9)^2 = 254.34$

Find the area of the compound figures.

11.



$A = lw$

$A = (5)(5)$

$A = 25m^2$

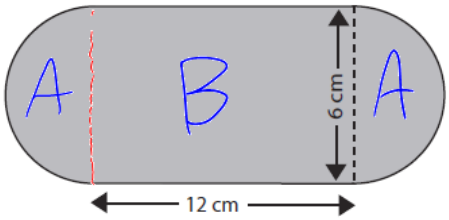
$B = lw$

$B = (3)(15)$

$B = 45m^2$

Total Area is $25 + 45 = 70m^2$

12.



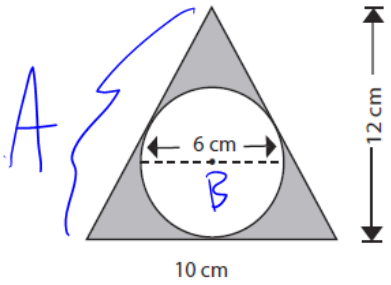
$A = \pi r^2$ $\quad B = lw$

$A = (3.14)(3^2)$ $\quad B = (12)(6)$

$A = 28.26 cm^2$ $\quad B = 72 cm^2$

Total Area is $100.26 cm^2$

13. Calculate the Area of the shaded region.



$A = \frac{bh}{2}$ $\quad B = \pi r^2$

$A = \frac{(10)(12)}{2}$ $\quad B = (3.14)(3^2)$

$A = 60 cm^2$ $\quad B = 28.26 cm^2$

The Area of the shaded region is $60 - 28.26$

$= 31.74 cm^2$

Success Criteria:

- I can find the perimeter and area of a square, rectangle, triangle, parallelogram, or trapezoid
- I can find the circumference and area of a circle
- I can find the area of compound shapes by breaking them down into simpler shapes
- I can, if given the area, find another missing dimension