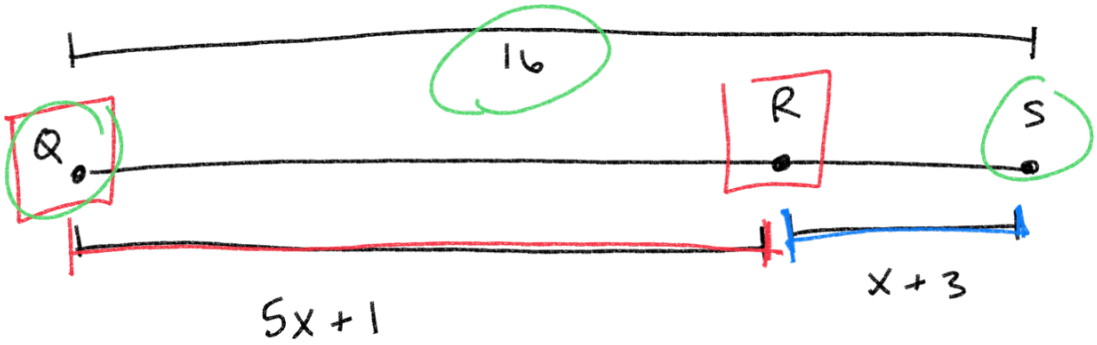
S-G Geometry Session 3 6/20



$\overline{QR} = 5x+1$

$\overline{RS} = x+3$

$\overline{QS} = 16$

Segment Addition Postulate

$\overline{QR} + \overline{RS} = \overline{QS}$

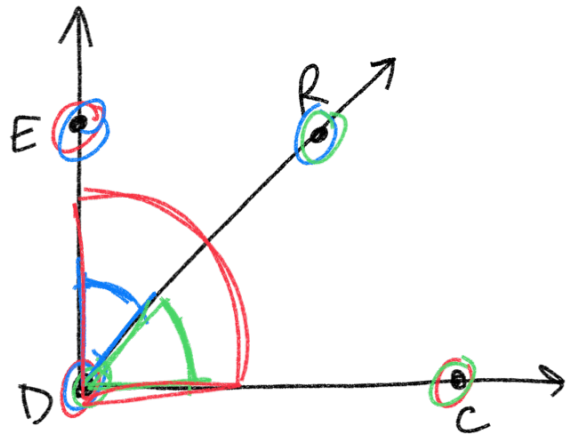
$5x+1 + x+3 = 16$

$6x + 4 = 16$

$-4 \quad -4$

$\frac{6x}{6} = \frac{12}{6}$

$x = 2$



$\angle EDC = 8x+13$

$\angle EDR = 3x+3$

$\angle RDC = 55°$

Angle Addition Postulate

$\angle EDR + \angle RDC = \angle EDC$

$3x+3 + 55 = 8x+13$

$3x + 58 = 8x + 13$

$-13 \quad -13$

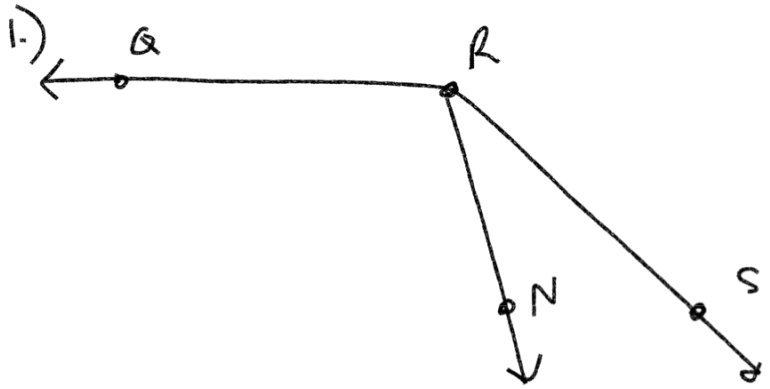
$3x + 45 = 8x$

$-3x \quad -3x$

$\frac{45}{5} = \frac{5x}{5}$

$x = 9$

1.)



$\measuredangle NRQ = 42x + 5$

$\measuredangle SRQ = 155$

$\measuredangle SRN = 8x$

$\measuredangle NRQ + \measuredangle SRN = \measuredangle SRQ$

$42x + 5 + 8x = 155$

$50x + 5 = 155$

$-5 \quad -5$

$\frac{50x}{50} = \frac{150}{50}$

$\boxed{x = 3}$

2.)

$\overline{ST} = 8x + 1$

$\overline{TU} = 3x - 1$

$\overline{SU} = 11$

$\overline{SU} = \overline{ST} + \overline{TU}$

$11 = 8x + 1 + 3x - 1$

$\frac{11}{11} = \frac{11x}{11}$

$\boxed{1 = x}$

Find the distance between $(-2,6)$ $(3,-6)$

$x_2\ y_2$ $x_1\ y_1$

$$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

$$\sqrt{(-2-3)^2 + (6-(-6))^2}$$

$6+6$

$$\sqrt{(-5)^2 + (12)^2}$$

$$\sqrt{25+144} = \sqrt{169} = \boxed{13}$$

switch

$$\sqrt{(3-(-2))^2 + (-6-6)^2}$$

$$\sqrt{5^2 + (-12)^2}$$

$$\sqrt{25+144} = \sqrt{169} = 13$$

order does not matter!!

Reducing Radicals

Look for perfect squares

0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100...

+1 +3 +5 +7 +9 +11 +13 +15 +17 +19

add consecutive odd numbers

$\sqrt{80}$

$\sqrt{16} * \sqrt{5}$

$\boxed{4\sqrt{5}} = \sqrt{80}$

$\sqrt{80}$

$\sqrt{4} \cdot \sqrt{20}$

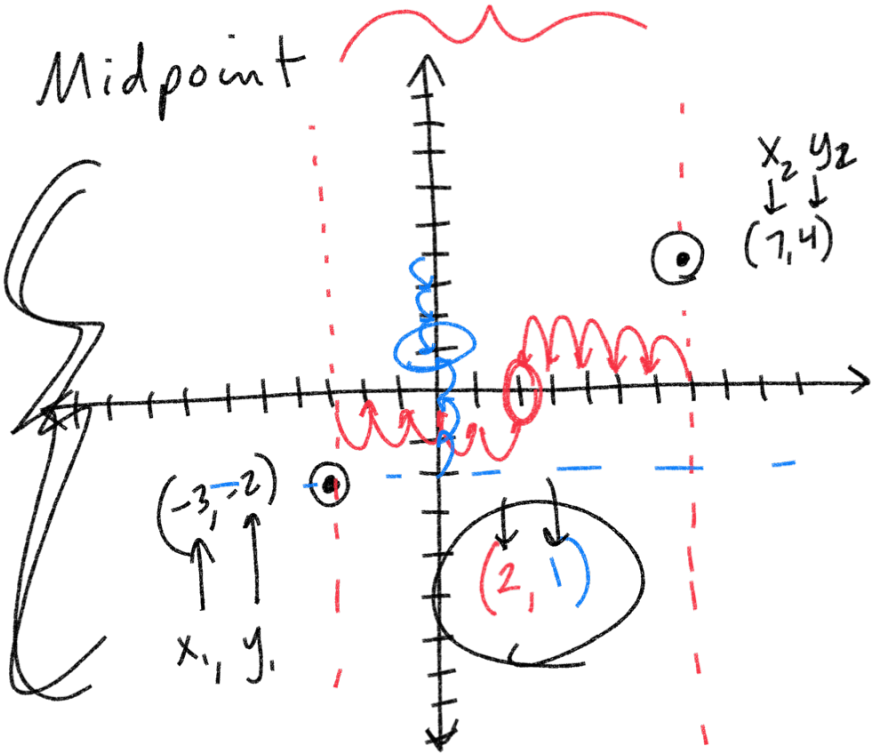
$\sqrt{4} \cdot \sqrt{5}$

$\sqrt{80} = \sqrt{4} \cdot \sqrt{4} \cdot \sqrt{5}$

$2 \cdot 2 \cdot \sqrt{5}$

$4\sqrt{5}$

Midpoint



Average x points — Average y points

$$\left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)$$

$$\left(\frac{7+(-3)}{2}, \frac{4+(-2)}{2}\right)$$

$$\left(\frac{4}{2}, \frac{2}{2}\right)$$

$$(2, 1)$$

Find the midpoint.

(8, 5) and (-2, -3)

Midpoint Formula

$$\left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)$$

$$\left(\frac{-2+8}{2}, \frac{-3+5}{2}\right)$$

$$\left(\frac{6}{2}, \frac{2}{2}\right)$$

$$(3, 1)$$

Keep in mind

$$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

1-7 Area & Perimeter

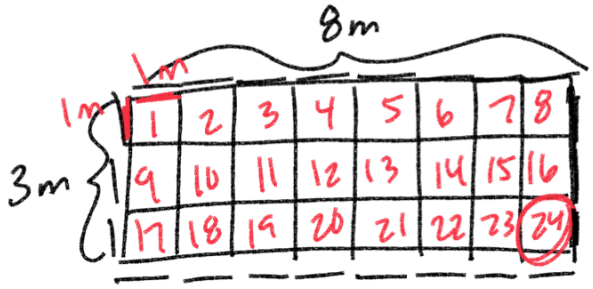
$A = H * L$

Area = Height * Length

↓ ↓

3m * 8m

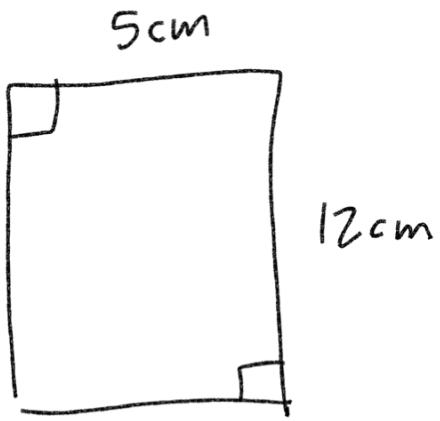
$24\ m^2$



Perimeter: $2L + 2H$

$2(8m) + 2(3m)$

$16m + 6m = \boxed{22m}$



$A = 12cm * 5cm = \boxed{60\ cm^2}$

$P = 2(5cm) + 2(12cm)$

$10cm + 24cm = \boxed{34cm}$

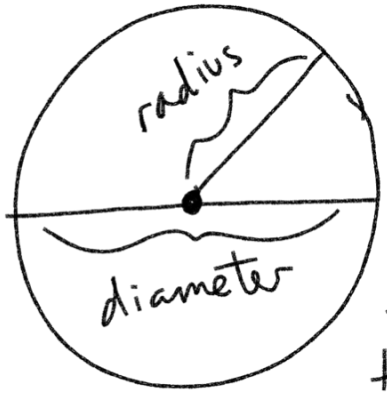
$\pi \approx 3.141592...$

Circle

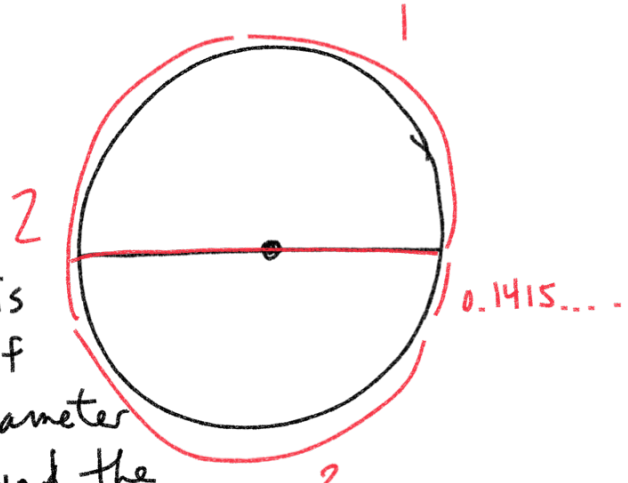
$\frac{1}{2}$ diameter = 1 radius

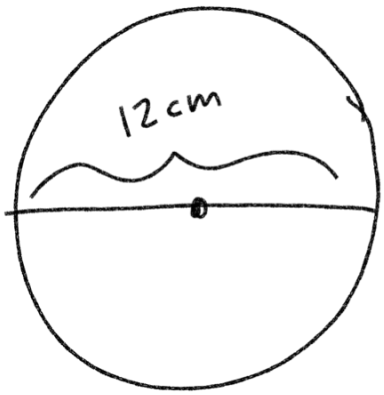
$\frac{1}{2}d = r$

$d = 2r$



Idea: Pi is the number of times the diameter can wrap around the circumference of a circle.





$C = \pi d$

$C = \pi(12\text{cm})$

$C = \boxed{12\pi \text{ cm}}$

$12 * 3.141592\ldots = \boxed{37.7\text{cm}}$

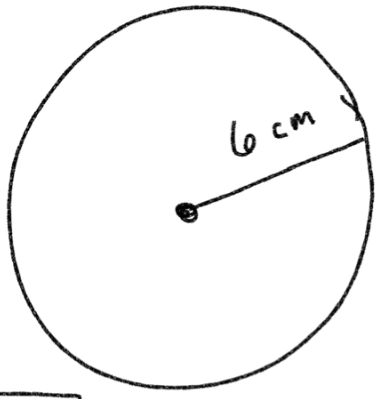
Area of a Circle

$A = \pi r^2$

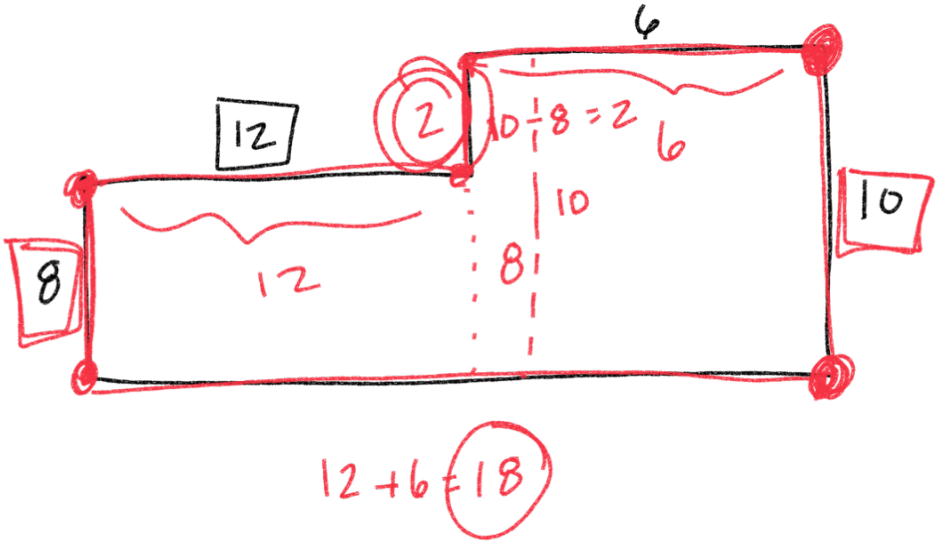
$= \pi(6\text{cm})^2$

$= \boxed{36\pi \text{ cm}^2}$

$d = 2r$



$C = \pi d = 2\pi r = 2\pi(6\text{cm}) = \boxed{12\pi \text{ cm}}$



12 + 6 = 18

Find Perimeter

12 + 2 + 6 + 10 + 18 + 8

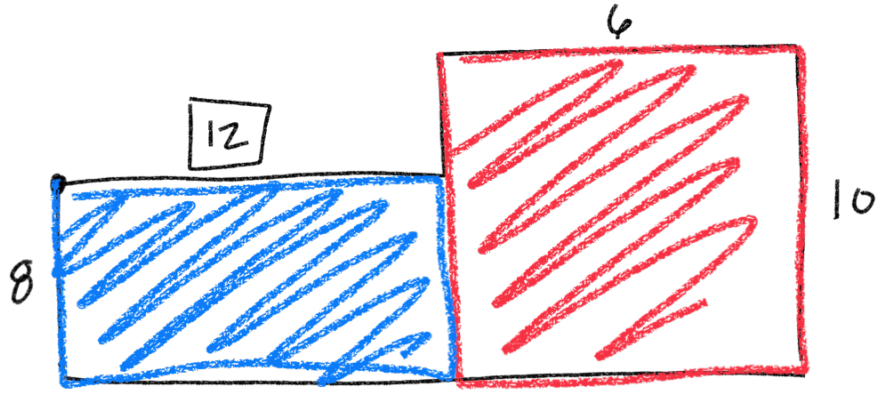
14 + 6

20 + 10

30 + 18

48 + 8

56 units



Red

10 * 6

60 units²

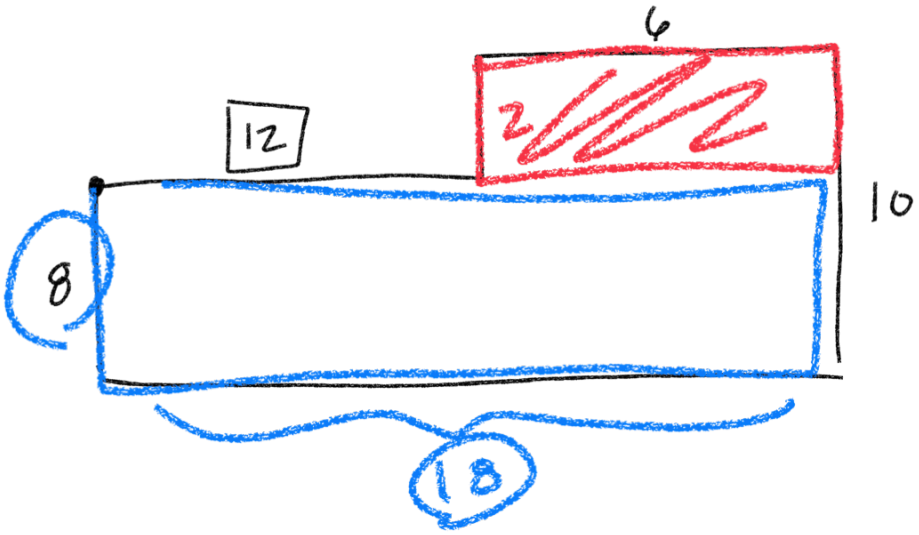
Blue

12 * 8

96 units²

60 units² + 96 units²

156 units²



6 x 2

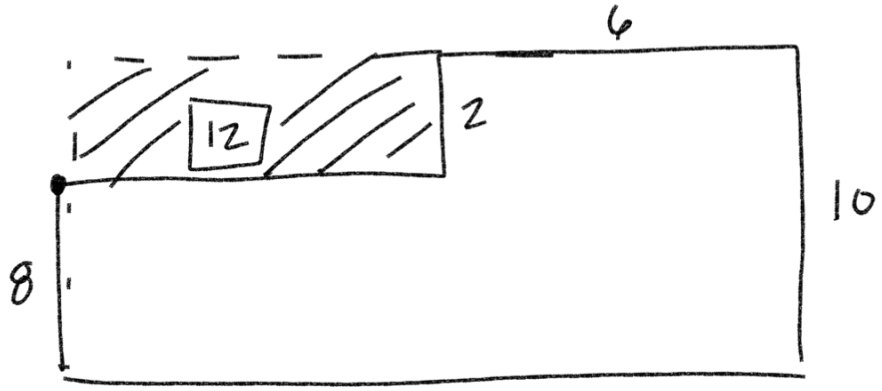
12 units²

8 * 18

144 units²

12 units² + 144 units²

156 units



Whole - missing

18 * 10

180 units²

12 * 2

24 units²

180 units² - 24 units²

156 units²