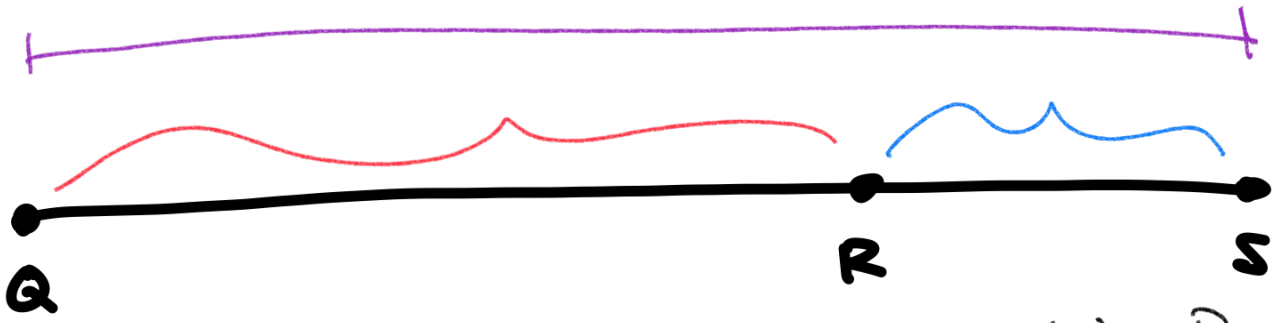
M-G Geometry · Week 4 9/29



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

$\overline{RS} = x+3$

$\overline{QS} = 16$

Segment Addition Postulate

piece + piece = whole

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

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

$6x + 4 = 16$

$-4 \quad -4$

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

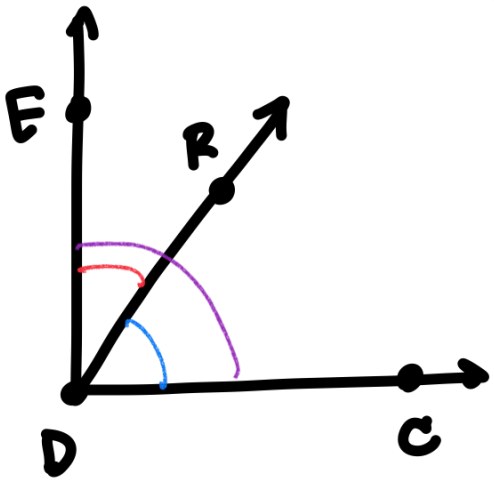
$x = 2$

Find the length of $\overline{QR}$

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

$5(2)+1$

$10+1 = 11$



$\measuredangle EDC = 8x+13$

$\measuredangle EDR = 3x+3$

$\measuredangle RDC = 55^\circ$

Angle Addition Postulate (AAP)

piece + piece = whole

$\measuredangle EDR + \measuredangle RDC = \measuredangle EDC$

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

$3x+58 = 8x+13$

$-3x \quad -3x$

$58 = 5x+13$

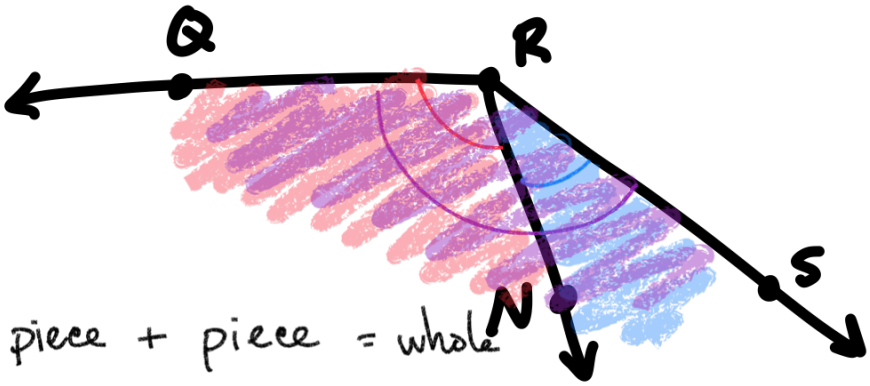
$-13 \quad -13$

$45 = 5x$

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

$x = 9$

1.)



$\angle SRN = 8x$

$\angle NRQ = 42x+5$

$\angle SRQ = 155$

piece + piece = whole

$\angle NRQ + \angle SRN = \angle SRQ$

$42x+5 + 8x = 155$

$50x + 5 = 155$

$-5 \quad -5$

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

$x = 3$

2.)

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

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

$\overline{SU} = 11$

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

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

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

$x = 1$

Distance Formula

Pythagorean Theorem

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

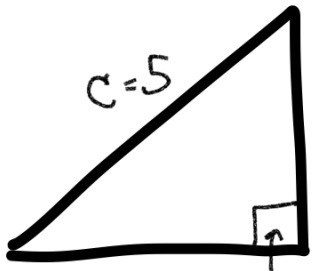
$$3^2 + 4^2 = c^2$$

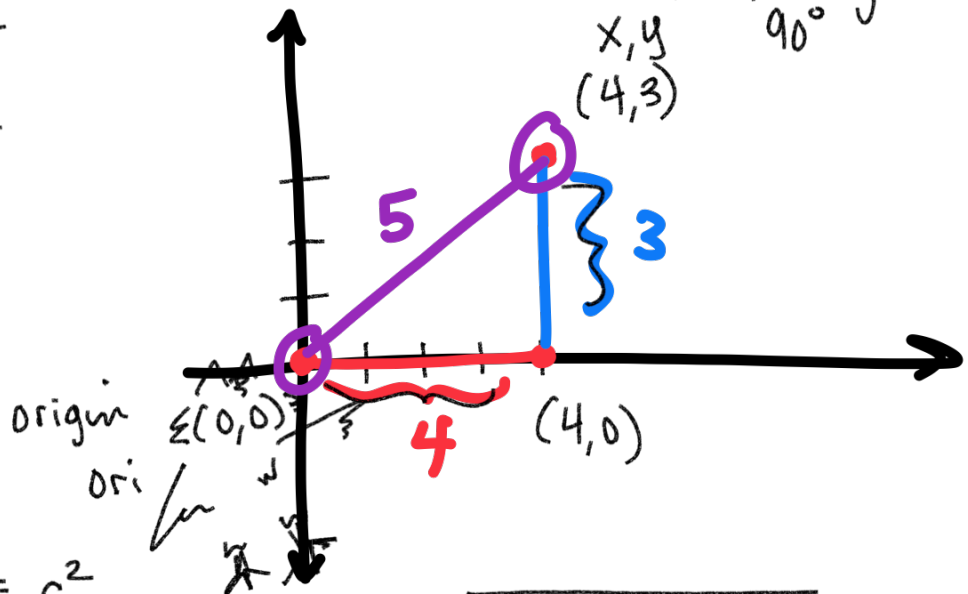
$$9 + 16 = c^2$$

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

$$5 = c$$

3-4-5 Triple





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

$$(4-0)^2 + (3-0)^2 = c^2$$

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

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

Find the distance between

$(3, 2)$ and $(-3, -6)$

x_1, y_1 $\quad$ x_2, y_2

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

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

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

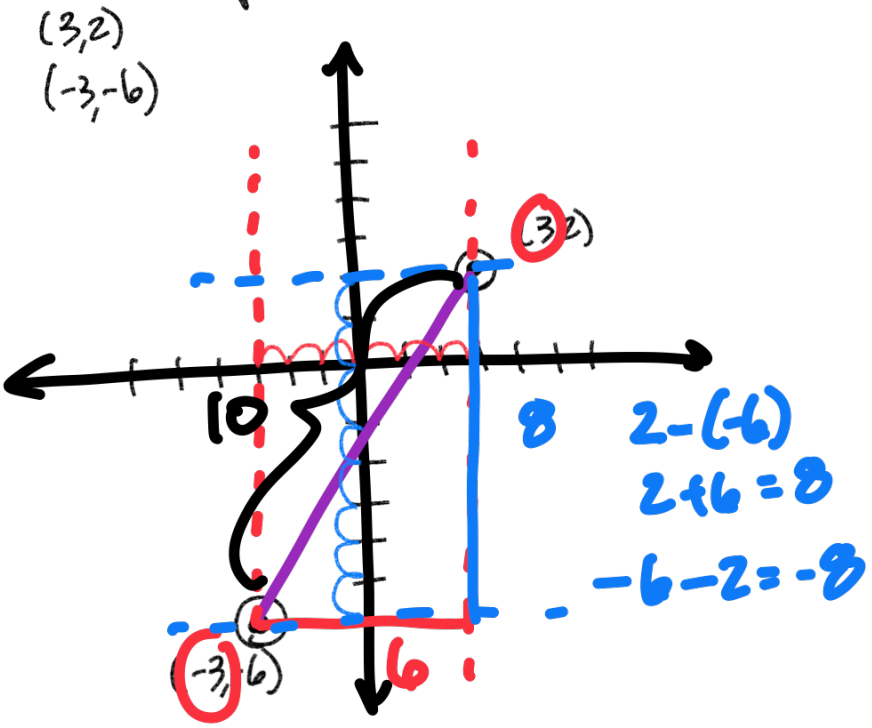
$$\sqrt{(-6)^2 + (-8)^2} = \sqrt{36 + 64} = \sqrt{100} = \boxed{10}$$

Difference of the x's

$$x_2 - x_1 = -3 - 3 = -6$$

Difference of the y's

$$y_2 - y_1 = -6 - 2 = -8$$



$2 - (-6)$

$2 + 6 = 8$

$-6 - 2 = -8$

$-3 - 3 = -6$

$3 - (-3) = 3 + 3 = 6$

Find the distance between the points $(5,2)$ and $(2,8)$

$$d = \sqrt{(\Delta x)^2 + (\Delta y)^2}$$

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

$$\sqrt{(5-2)^2 + (2-8)^2}$$

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

$$\sqrt{9 + 36} = \sqrt{45}$$

$$\sqrt{45} = \boxed{3\sqrt{5}}$$

3

$$\sqrt{3^2 + 6^2}$$

$$\sqrt{9 + 36} = \sqrt{45}$$

Simplify $\sqrt{45}$

Look for largest perfect square to factor

+3 +5 +7 +9 +11 +13 +15 +17 +19 +21

1, 4, 9, 16, 25, 36, 49, 64, 81, 100 . . . 121

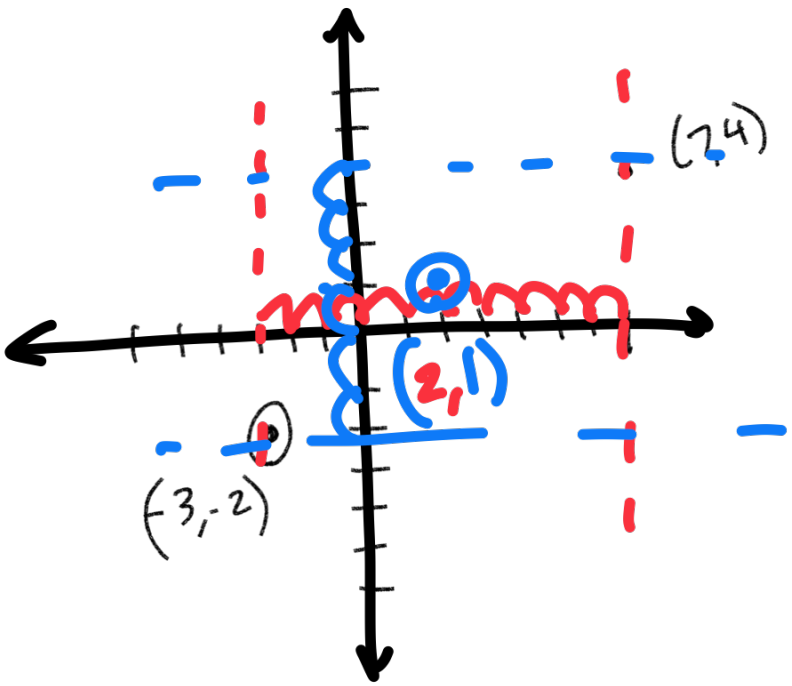
$\sqrt{45}$

$\sqrt{9}$ $\sqrt{5}$

$3\sqrt{5}$

Midpoint

$(-3,-2)$ and $(7,4)$



The midpoint is just the average

$$\left(\frac{\text{Average of } x}{}, \frac{\text{Average of } y}{}\right)$$

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

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

$$\frac{4}{2}, \frac{2}{2} = \boxed{(2,1)}$$

Find the midpoint $(8,5)$ and $(-2,-3)$

(x,y)

$$\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}$$

$$\frac{8+(-2)}{2} \quad \frac{5+(-3)}{2}$$

$$\frac{6}{2} \quad \frac{2}{2}$$

$$\boxed{(3,1)}$$

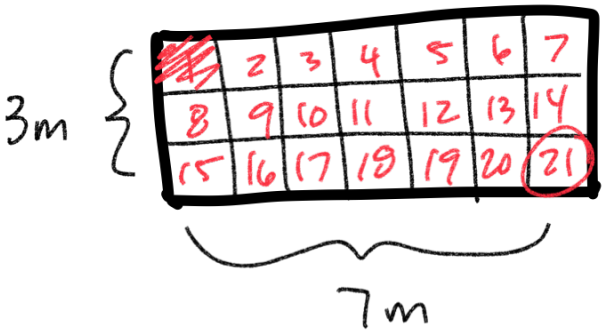
Distance Formula

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

Midpoint

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

Area and Perimeter



Area = length * height

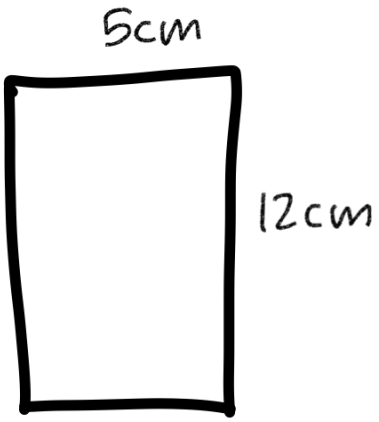
$7m * 3m$

$\boxed{21 m^2}$

Perimeter: $2L + 2H$

$2(7m) + 2(3m)$

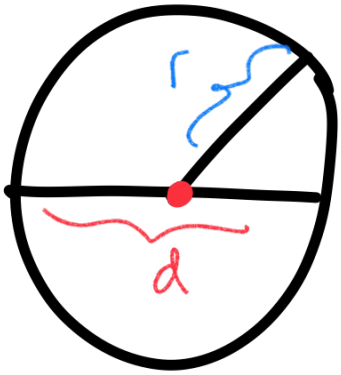
$14m + 6m = \boxed{20m}$



A: $(5cm)(12cm) = \boxed{60cm^2}$

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

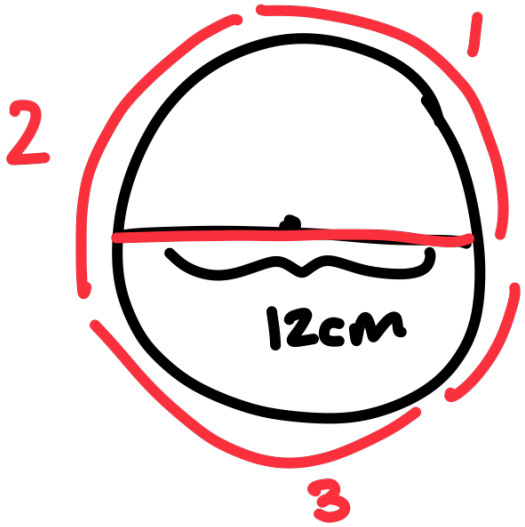
$10cm + 24cm = \boxed{34cm}$



d = diameter

r = radius

$2r = d$



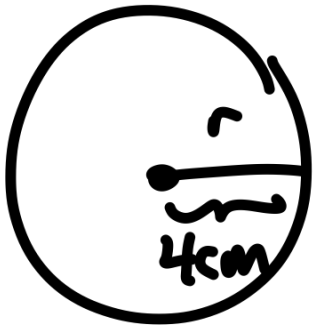
Circumference

$C = \pi d$

$C = \pi(12)$

$\boxed{12\pi\ cm}$

Area $A = \pi r^2$

$\pi(4cm)^2$

$\boxed{16\pi\ cm^2}$