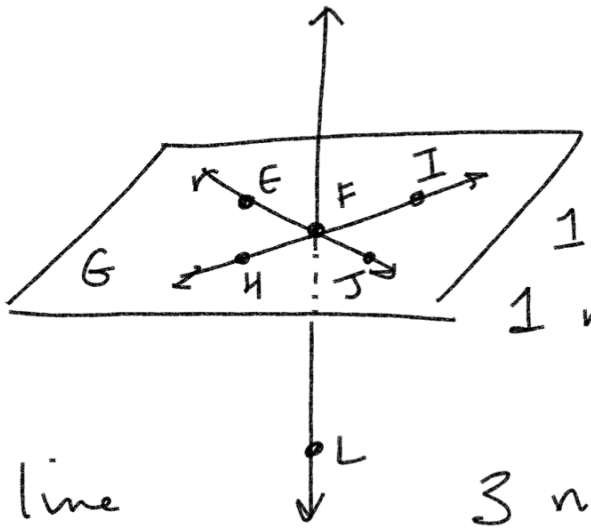
S-G Geometry 6/10 Session 3

Name Plane G

HIE
JFH
EFI

~~EJF~~ on the same line

~~HIL~~ L not on plane G



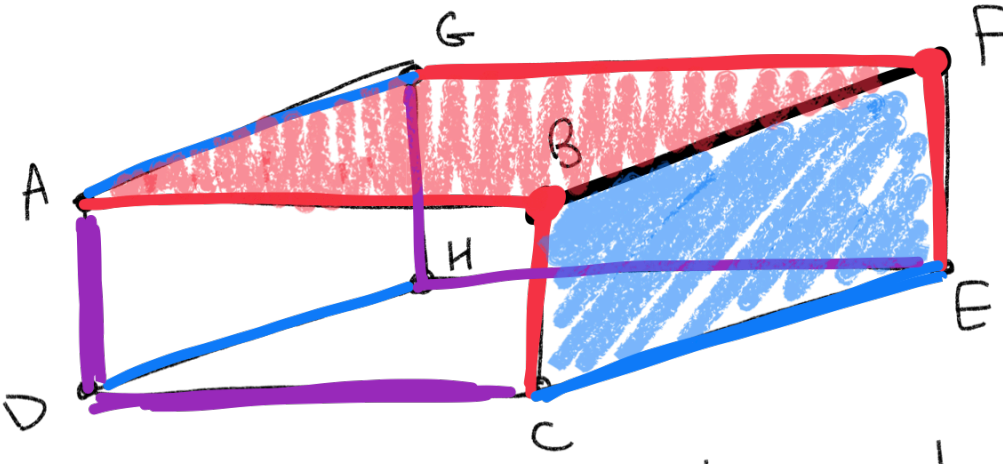
Requirements for a plane

1 line and 1 noncollinear pt.

or

3 noncollinear pts

$\overline{BF}$



1.) Intersecting segments

$\overline{BC}$, $\overline{AB}$, $\overline{GF}$, $\overline{FE}$

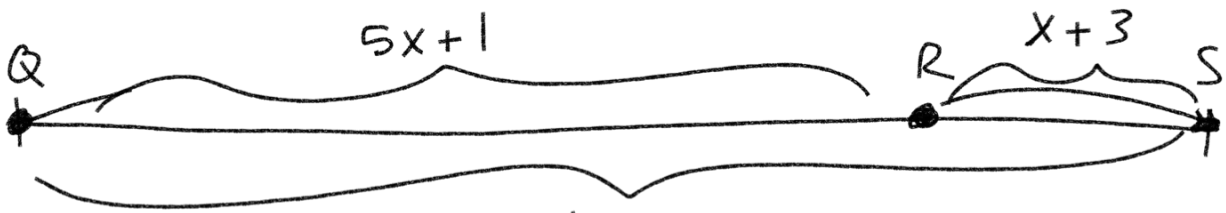
2.) Parallel segments

$\overline{CE}$, $\overline{AG}$, $\overline{DH}$

3.) skew

$\overline{AD}$, $\overline{DC}$, $\overline{GH}$, $\overline{HE}$

A B G F C E B F intersection is $\overline{BF}$



Segment Addition Postulate

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

$\overline{RS} = x+3$

$\overline{QS} = 16$

help for later →

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

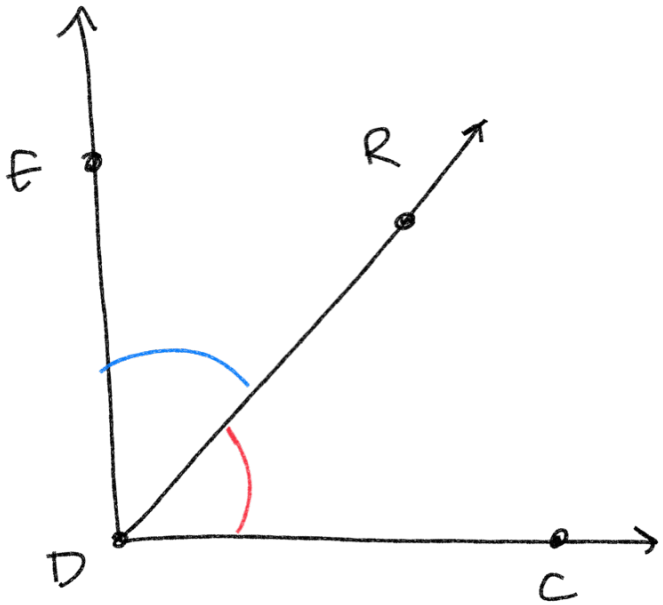
$5x+1 + x+3 = 16$

$6x + 4 = 16$

$-4 \quad -4$

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

$x = 2$



Angle Addition Postulate

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

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

$3x + 58 = 8x + 13$

$-13 \quad -13$

$3x + 45 = 8x$

$-3x \quad -3x$

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

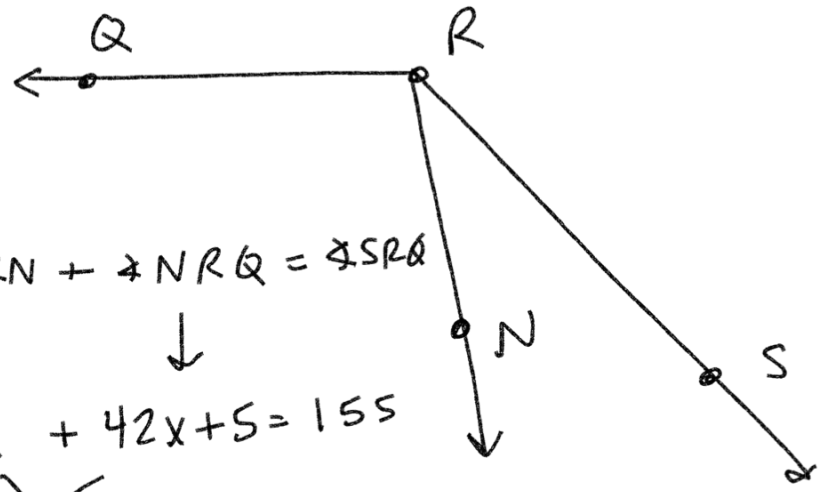
$x = 9$

$\angle EDC = 8x+13$

$\angle EDR = 3x+3$

$\angle RDC = 55°$

1.)



$\angle \rightarrow$ angle

$\overline{AB} \rightarrow$ segment

$\angle NRQ = 42x + 5$

$\angle SRQ = 155$

$\angle SRN = 8x$

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

$8x + 42x + 5 = 155$

$50x + 5 = 155$

$-5 \quad -5$

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

$\boxed{x = 3}$

2.)

$\overline{ST} = 8x + 1 \qquad \overline{TU} = 3x - 1 \qquad \overline{SU} = 11$

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

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

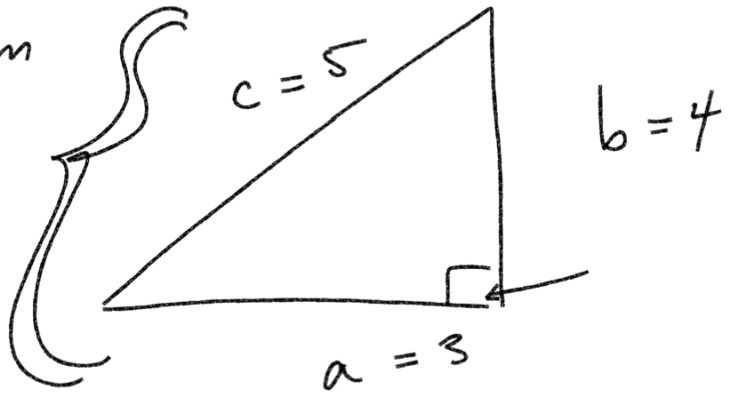
$\frac{11x}{11} = \frac{11}{11}$

$\boxed{x = 1}$

Distance formula

Right Triangle

Pythagorean Theorem



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

$$3^2 + 4^2 = 5^2$$

$$9 + 16 = 25$$

$$25 = 25$$

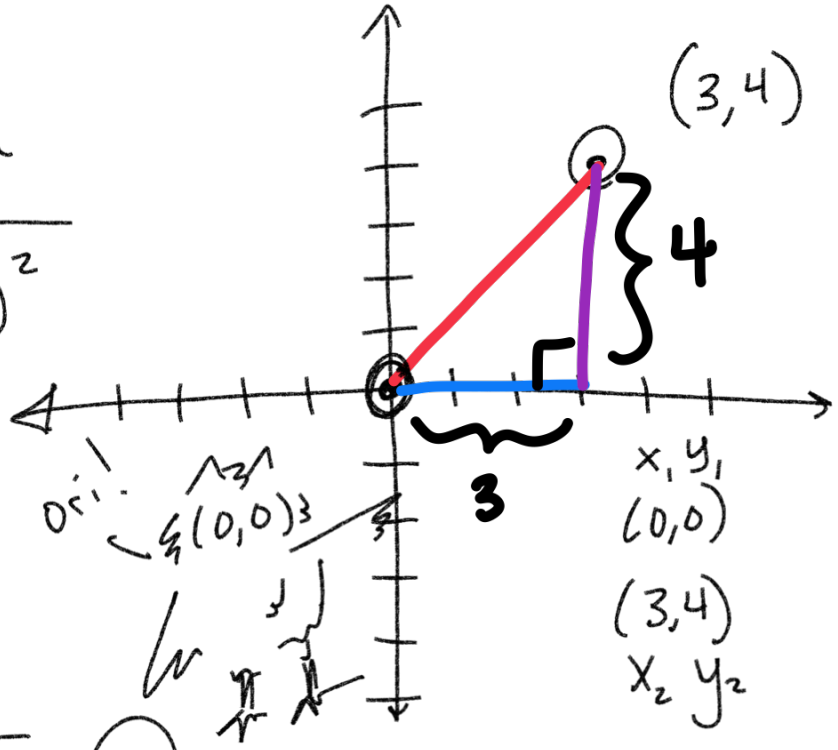
Distance Formula

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

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

$$\sqrt{3^2 + 4^2}$$

$$\sqrt{9+16} = \sqrt{25} = 5$$



Find distance between $(1,-3)$ and $(6,9)$

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

$$\sqrt{(6-1)^2+(9-(-3))^2}$$

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

$$\sqrt{25+144}$$

$$\sqrt{169}$$

$$\boxed{13}$$

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

$$\sqrt{(1-6)^2+(-3-9)^2}$$

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

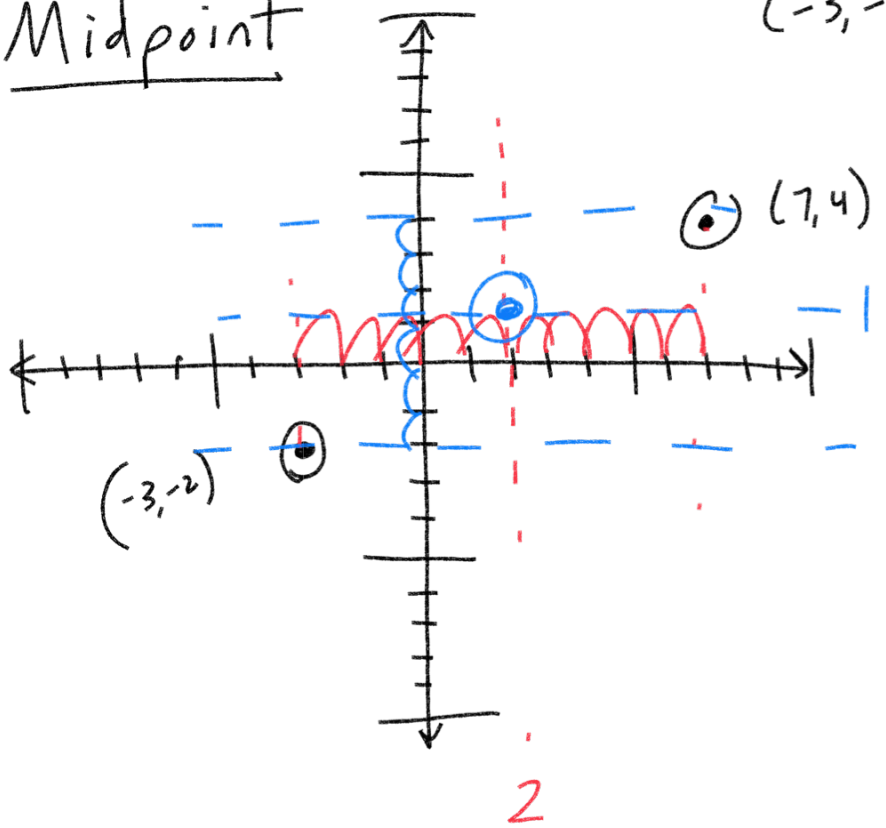
$$\sqrt{25+144}$$

$$\sqrt{169}$$

$$\boxed{13}$$

Midpoint

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



Midpoint → $(2,1)$

Average x's: $\frac{x_2+x_1}{2}$ → $\frac{-3+7}{2}$ → $\frac{4}{2}$

Average y's: $\frac{y_2+y_1}{2}$ → $\frac{-2+4}{2}$ → $\frac{2}{2}$

$(2,1)$

Find the midpoint

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

Midpoint formula

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

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

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

$$(3, 1)$$

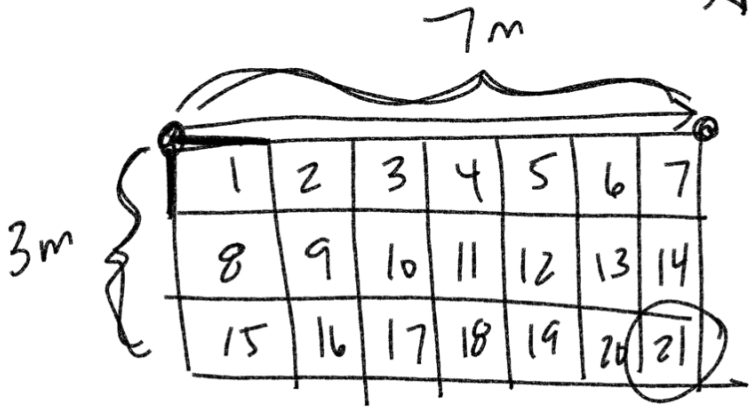
Remember distance formula:

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

Area and Perimeter

$A = H * L$

Area = height * length



$3m * 7m = \boxed{21 m^2}$

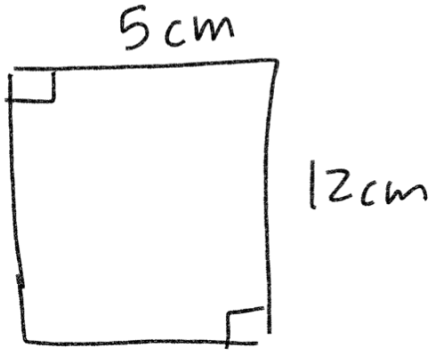
21 square meters

Perimeter: $2H + 2L$

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

$6m + 14m$

$\boxed{20 m}$



$A = 5\text{cm} * 12\text{cm}$

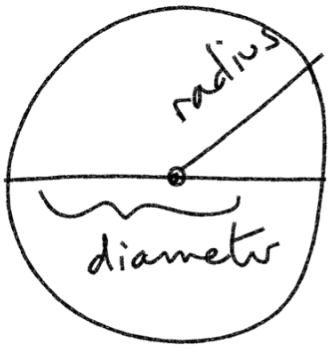
$60\ \text{cm}^2$

$P = 2(5\text{cm}) + 2(12\text{cm})$

$10\text{cm} + 24\text{cm}$

$34\ \text{cm}$

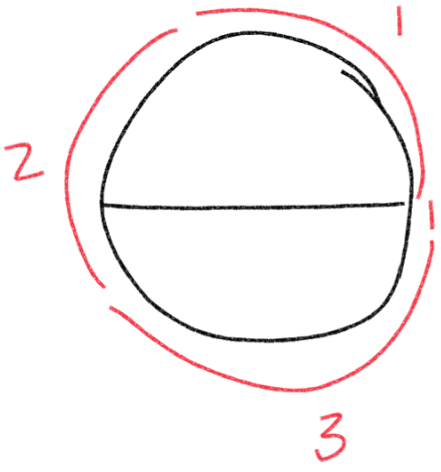
Circle



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

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

$d = 2r$



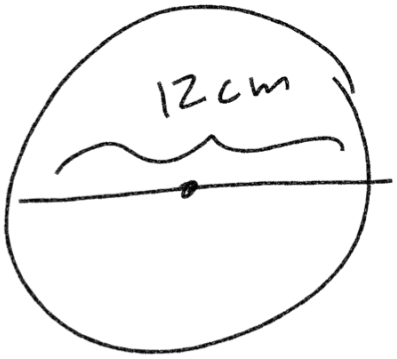
π number of times the the diameter can wrap wound the outside of a circle.

$\pi = 3.141592\ldots$

Circumference

$C = \pi d$ or

$C = 2\pi r$



$C = \pi d$

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

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

Area of Circle

$A = \pi r^2$

$\downarrow$

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

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