Math 115
Spring 2017
Lecture 8

Find two consecutive odd integers such that 5 times the smaller one reduced by the larger one is equal to 90.

Smaller x

Larger $x+2$

$5 \cdot \text{Smaller} - \text{larger} = 90$

$5 \cdot x - (x+2) = 90$

$5x - x - 2 = 90$

$4x = 92$

$x = 23$

{23 & 25}

Find two consecutive even integers such that 7 times the first one is equal to the difference of 370 and the second one.

First → x

Second → $x+2$

7 · First = 370 − Second

$7 \cdot x = 370 - (x+2)$

$7x = 370 - x - 2$

$7x + x = 368$

$8x = 368$

$x = 46$

46 & 48

Find three consecutive integers such that the sum of the first one and 3 times the third one is equal to 350 less twice the second.

First → x

Second → $x+1$

Third → $x+2$

A less B → A − B

A less than B → B − A

First + 3 · Third = 350 − 2 · Second

$x + 3(x+2) = 350 - 2(x+1)$

$x + 3x + 6 = 350 - 2x - 2$

$4x + 2x = 348 - 6$

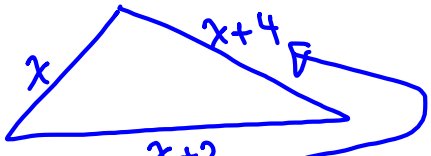
$6x = 342 \longrightarrow x = 57$

57, 58, & 59

The perimeter of a triangle is 231 inches.

Three sides are three cons. odd integers.

① Draw & label



② Set-up the eqn & Solve

$P = 231$

$a+b+c = 231$

$x + x+2 + x+4 = 231$

$3x + 6 = 231$

$3x = 225$

$\boxed{x = 75}$

③ Give the largest side.

$75 + 4 = 79$

79 inches

A rectangular room has a perimeter of 72 ft.

the width is half its length.

① Draw & label.

② Set-up the eqn & Solve.

$P = 72$

$2L + 2W = 72$

$2x + 2(\frac{1}{2}x) = 72$

$2x + x = 72$

$3x = 72$

$\boxed{x = 24}$

③ Give its dimensions.

24 ft by 12 ft

④ Give its area.

$A = LW$

$= 24 \cdot 12$

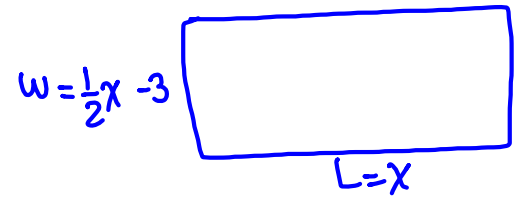
$\boxed{A = 288\ ft^2}$

The width of a rectangular room is 3 m shorter than half its length. Perimeter of the room is 102 m. Find its area

① Draw & label

② Set-up the eqn & Solve

③ look for area



$P = 102$

$2L+2w=102$

$2x+2\left(\frac{1}{2}x-3\right)=102$

$2x+x-6=102$

$3x=108$

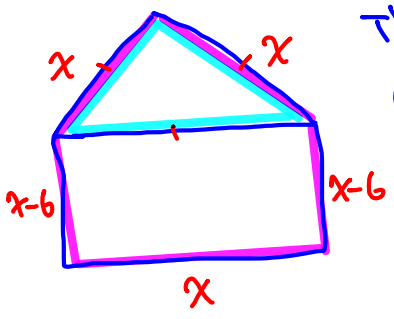
$x=36$

Length $=36$m

Width $=\frac{1}{2}(36)-3=18-3=15$m

$A=LW=36(15)=\boxed{540\text{ m}^2}$

An equalateral triangle is on top of the lenght of a rectangle as shown below:



The width of the rectangle is 6 inches shorter than its length. The perimeter of the shape is 68 inches. Find the perimeter of the triangle.

$\boxed{x}+\boxed{x-6}+\boxed{x}+\boxed{x}+\boxed{x-6}=68$

$5x-12=68$

$5x=80$

$\boxed{x=16}$

$P_{Triangle}=3x$

$P=3(16)=\boxed{48\text{ inches}}$

Every 1.5 inches on the map is for 175 miles actual distance.

Two cities are 12 inches apart on a map. Find actual distance by using ratio & Proportion.

$$\frac{1.5 \text{ inches}}{175 \text{ miles}} = \frac{12 \text{ inches}}{x \text{ Miles}}$$

1400 miles

Solve

$$\frac{1.5}{175} = \frac{12}{x}$$

$$1.5x = 12(175)$$

$$x = \frac{12(175)}{1.5}$$

$$x = 1400$$

Use two methods to Solve:

What percent of 880 is 92.4?

$$\frac{P}{100} \cdot 880 = 92.4$$

$$8.8P = 92.4$$

$$P = \frac{92.4}{8.8}$$

$$P = 10.5$$

10.5%

$$\frac{P}{100} = \frac{\text{Part}}{\text{whole}}$$

$$\frac{P}{100} = \frac{92.4}{880}$$

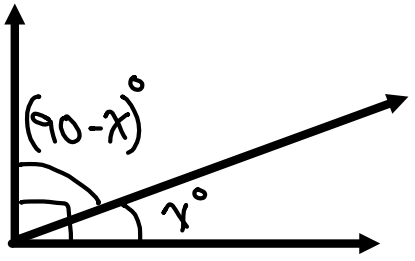
$$880P = 100(92.4)$$

$$P = \frac{100(92.4)}{880}$$

$$P = 10.5$$

10.5%

Two angles are called Complementary angles if their sum is 90°



20° & 70°

40° & 50°

68° & 22°

1° & 89°

Find two complementary angles such that the sum of twice the first and 3 times the Second is 200.

First → x

Second → 90-x

$2 \cdot \text{First} + 3 \cdot \text{Second} = 200$

$2 \cdot x + 3(90 - x) = 200$

$2x + 270 - 3x = 200$

$-x = 200 - 270$

$-x = -70 \rightarrow x = 70$

70° & 20°

Find two complementary angles such that 4 times one of them is equal to 5 times the other one.

x & $90-x$

$4x = 5(90-x)$

$4x = 450 - 5x$

$4x + 5x = 450$

$9x = 450$

$x = 50$

50° & 40°

Find two complementary angles such that the difference of 3 times one of them and 6 times the other one is equal to 0.

x & $90-x$

$3x - 6(90-x) = 0$

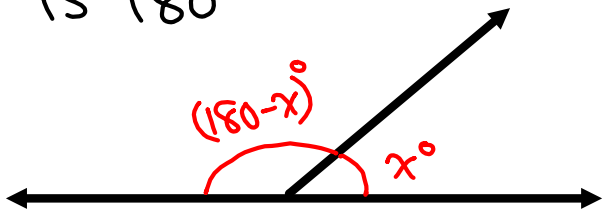
$3x - 540 + 6x = 0$

$9x = 540$

$x = 60$

60° & 30°

Two angles are Supplementary if their Sum is 180°



10° & 170°

100° & 80°

30° & 150°

1° & 179°

Find two Supplementary angles such that the sum of 5 times one of them and 3 times the other one is 564.

x & $180-x$

$5 \cdot x + 3 \cdot (180-x) = 564$

$5x + 540 - 3x = 564$

$2x = 24$

$x = 12$

12° & 168°

Find two Supplementary angles such that 5 times one of them is equal to the sum of 260 and 3 times the other one.

x & $180-x$

$5 \cdot x = 260 + 3(180-x)$

$5x = 260 + 540 - 3x$

$5x + 3x = 800$

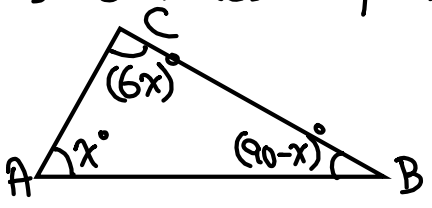
$8x = 800$

$x = 100$

100° & 80°

In triangle ABC, Angles A and B are Complementary. Angle C is 6 times angle A.

① Draw & label.



② Set up your eqn. & Solve

$A + B + C = 180$

$x + 90 - x + 6x = 180$

$6x = 90$

$x = 15$

③ Find all three angles.

$m\angle A = 15°$

$m\angle B = 75°$

$m\angle C = 90°$

Agenda for Tuesday

1) Collect SG 6 & 7 at 6:00 AM

2) Turn in any work that you, for whatever reason, did not turn in. for Some credit. at 6:00 AM

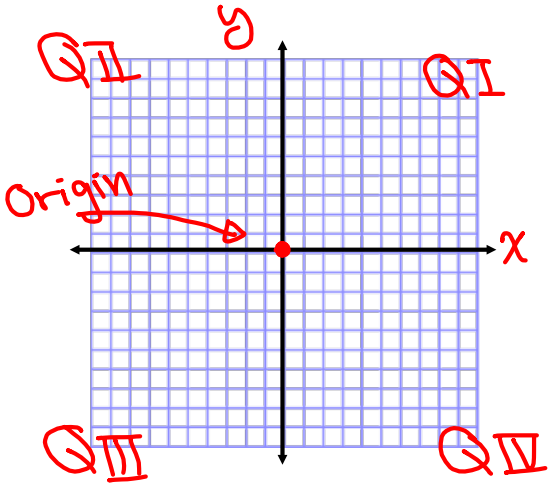
3) lecture

4) Exam 1 Starts around 7:20.

Introduction to graphing:

Points → (x, y) ordered-pair

(3,2), (-4,7), (-2,-5), (0,-2), (8,-3), (4,0), (0,0)



Rectangular Coordinate System

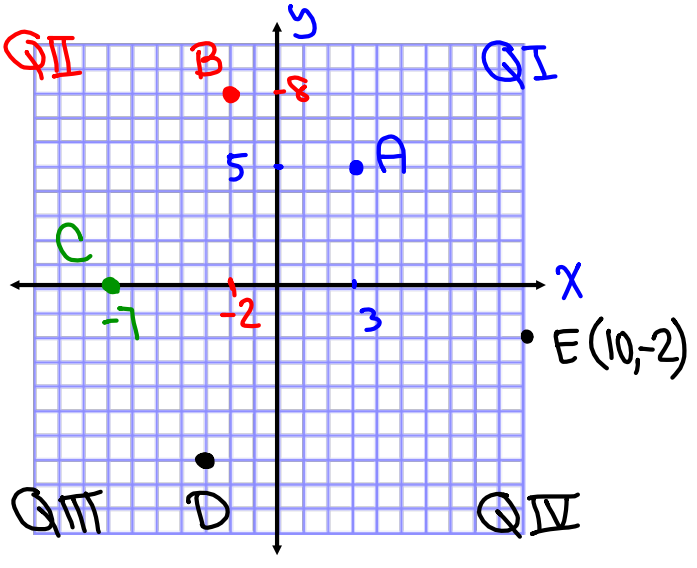
Plot

A(3,5)

B(-2,8)

C(-7,0)

D(-3,-7)

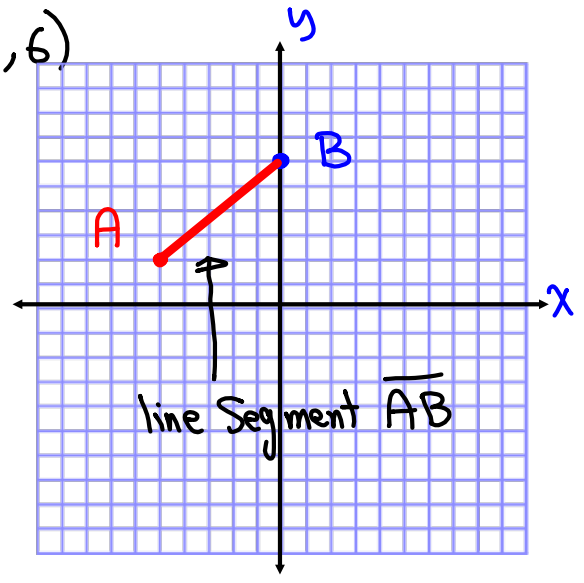


A(-5,2) & B(0,6)

Plot A & B,

Connect A to B

by a straight line



A (-4,0) , B (7,-3)

① Plot A & B

② Draw $\overline{AB}$