

Math 115

Fall 2017

Lecture 8



Consecutive integers:

$$\left. \begin{array}{l} 3, 4, 5, 6, \dots \\ 19, 20, 21, 22, \dots \\ -17, -16, -15, \dots \end{array} \right\} x, x+1, x+2, \dots$$

Find two cons. integers such that
their sum is 231.

$$x, x+1$$

115 & 116

$$x + x+1 = 231$$

$$2x + 1 = 231 \rightarrow x = \frac{230}{2}$$

$$2x = 231 - 1$$

$$2x = 230$$

$$x = 115$$

The perimeter of a rectangle is 70 ft.
Length & width are two cons. integers.

Find its dimensions.

$$2L + 2W = 70$$

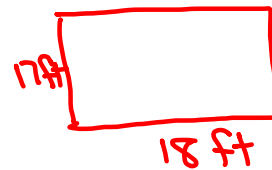
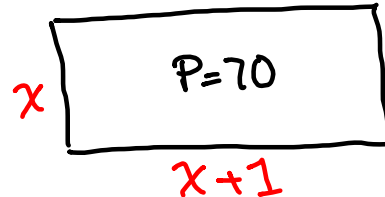
$$2(x+1) + 2(x) = 70$$

$$2x + 2 + 2x = 70$$

$$4x + 2 = 70$$

$$4x = 70 - 2$$

$$4x = 68$$



$$x = \frac{68}{4}$$

17 ft by 18 ft

Find two cons. integers such that
 the sum of twice the smaller one and
3 times the larger one is 118.

Smaller x

Larger $x+1$

$$2 \text{ Smaller} + 3 \text{ larger} = 118$$

$$2x + 3(x+1) = 118$$

$$2x + 3x + 3 = 118$$

$$5x = 118 - 3$$

$$5x = 115$$

$$x = \frac{115}{5}$$

$$x = 23$$

$$23 \text{ \& } 24$$

Find two cons. integers such that

4 times the smaller one is equal to the difference of 158 and 5 times the larger one.

Smaller x
Larger $x+1$

17 & 18

$$4 \cdot \text{Smaller} = 158 - 5 \cdot \text{larger}$$

$$4x = 158 - 5(x+1)$$

$$4x = 158 - 5x - 5$$

$$4x + 5x = 153$$

$$9x = 153 \quad x = \frac{153}{9}$$

$$x = 17$$

Consecutive even integers

16, 18, 20,

90, 92, 94,

-10, -8, -6, -4,

$x, x+2, x+4, \dots$
 x must be even.

Find two cons. even integers such that their total is 146.

x & $x+2$

72 & 74

$$x + x + 2 = 146$$

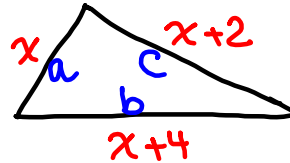
$$2x + 2 = 146$$

$$2x = 144 \rightarrow x = 72$$

Three Sides of a triangle are three Cons. even integers.

Its perimeter is 90 inches.

Find the longest Side.



Side 1 : x

$$P = 90$$

Side 2 : $x+2$

$$a + b + c = 90$$

Side 3 : $x+4$

$$x + x+4 + x+2 = 90$$

$$x = \frac{84}{3}$$

$$x = 28$$

$$28 + 4 = 32$$

$$3x + 6 = 90$$

$$3x = 90 - 6$$

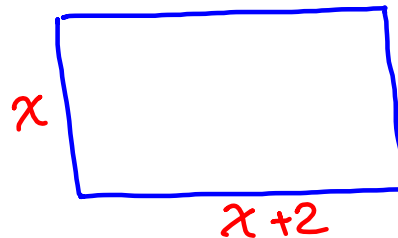
$$3x = 84$$

32 inches

A rectangular backyard has a perimeter of 132 ft. Its dimensions are two Cons. even integers. Find its length.

$$P = 132$$

$$2L + 2W = 132$$



$$2(x+2) + 2(x) = 132$$

$$2x + 4 + 2x = 132$$

$$4x + 4 = 132$$

$$4x = 132 - 4$$

$$4x = 128$$

$$x = \frac{128}{4}$$

$$x = 32$$

$$32 + 2 = 34$$

34 ft

Consecutive odd integers

17, 19, 21,

93, 95, 97,

-15, -13, -11,

$x, x+2, x+4$



x must be odd.

Find two cons. odd integers whose sum is 32.

$$x + x + 2 = 32$$

$$2x = 30$$

$$x = 15$$

15 & 17

Find two cons. odd integers such that 5 times the smaller one reduced by twice the larger one is equal to 185.

x & $x+2$

$$5 \cdot \text{smaller} - 2 \cdot \text{larger} = 185$$

$$5x - 2(x + 2) = 185$$

$$5x - 2x - 4 = 185$$

$$3x - 4 = 185$$

$$3x = 189$$

$$x = \frac{189}{3} \quad x = 63$$

63 & 65

$$5 \cdot 63 - 2 \cdot 65 = 185 \checkmark$$

Find two cons. odd integers such that

3 times the smaller one is equal to

298 less than

7 times the larger one.

$$x \text{ \& } x+2$$

$$3x = 7(x+2) - 298$$

$$3x = 7x + 14 - 298$$

$$3x - 7x = -284$$

$$-4x = -284$$

$$x = \frac{-284}{-4} \quad \boxed{x=71}$$

$$71 \text{ \& } 73$$

Special Tutor

Every Friday in E7-210

9:30 AM - 11:30 AM