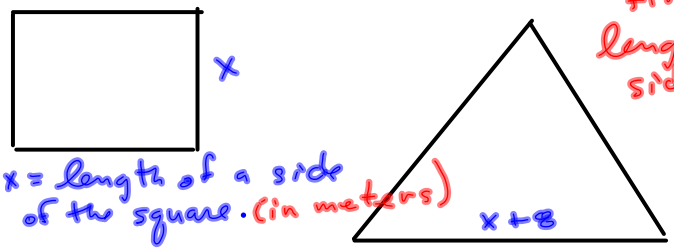
Two gardens are being fenced in. Both gardens will require the same amount of fencing (both gardens have the same perimeter in meters). One garden is in the shape of a square and the other is in the shape of an equilateral triangle. Each side of the triangle is 8 meters longer than each side of the square. Find the dimensions of the garden.

Find the length of the sides of each.



Let x = length of a side of the square. (in meters)

Perimeter = Perimeter

4 · side length = 3 · side length

$4x = 3(x+8)$ Distribute!

$4x = 3x + 24$

$-3x = -3x$

$x = 24$

Check it:

$4(24) = 3(24+8) = 3(32)$

$96 = 96$ Niiice.

Back-Track to §2.1 #47 (like #48)

Pathologies

$5(x-2)+2x=7(x+4)-38$

$5x-10+2x=7x+28-38$

$7x-10=7x-10$ warning!

$+10 \quad +10$

$7x=7x$

$-7x=-7x$

$0=0$

↳ statement is true, regardless of the value of x.

Solution Set:

All real numbers $= (-\infty, \infty) = \{x \mid x \text{ is real}\}$

Interval Notation

Set-builder Notation

Number line graph

Who's in the club

How he got in the club.

$5(x-2)+2x = 7(x+4)-37$

$5x-10+2x = 7x+28-37$

$7x-10 = 7x-9$ Warning!

$+10 \quad +10$

$7x = 7x+1$

$-7x = -7x$

$0 = 1$!?

No way

Absurd!

Premise is false

No Solution

RAA - Reductio ad Absurdum.

Reduce to Absurdity

To solve any equation, all our reasoning is based on this assumption:

Revise: THERE IS A SOLUTION

When you reason from a faulty premise, you arrive at an absurdity.

Sol'n Set = $\{\} = \emptyset$

The sum of the first and third of three consecutive even integers is 140. Find the three even integers.

Let n be an integer.

Find me an even integer in terms of n.

$2n$

ODD Integer: $2n+1$

$2n-1$

---

3 consecutive even integers

2, 4, 6

8, 10, 12

Let x = the first (smallest) integer.

$x, x+2, x+4$

The sum of the 1st & 3rd is 140.

$x + x+4 = 140$

$2x+4 = 140$

$-4 = -4$

$2x = 136$

$\frac{2x}{2} = \frac{136}{2}$

$x = 68$

Maybe come back.

The following graph is called a circle graph or a pie chart. The circle represents a whole, or in this case, 100%. This particular graph shows the number of minutes per day that people use e-mail at work. Use this graph to answer what percent of e-mail users at work spend less than 15 minutes on e-mail per day?

Jan 24-9:33 AM

§2.3 Formulas: 5 steps

STEP 1: Clear Fractions

I prefer writing everything over one denominator THEN decide if you can throw the denominator away (usually, we can).

STEP 2: Get rid of parens.

STEP 3: Combine like terms.

STEP 4: Get "the" variable on one side

STEP 5: Isolate "the" variable.

§2.3 #s 1, 4, 7, ..., 40

Solve #22 $L = a + (n-1)d$ for d

$L = a + nd - 1d$
$L = a + (n-1)d$ } Skip!

$a + (n-1)d = L$

$-a \qquad = -a$

$(n-1)d = L - a$ Need

$\frac{(n-1)d}{n-1} = \frac{L-a}{n-1}$

$\boxed{d = \frac{L-a}{n-1}}$ Need

TI 30 II

x s

$A = P\left(1 + \frac{r}{n}\right)^{nt}$

P = Principal

r = Interest rate

t = # of years

n = # of compoundings per year.

principle

8% compounded annually: n = 1

Year

1 $100 + (100)(.08)$

$= 100(1 + .08)$

2 $100 + 100(.08) + (100 + 100(.08)).08$

$= 100(1 + .08) + (100(1 + .08))(.08)$

$= 100(1 + .08)[1 + .08] = 100(1.08)^2$

3 $100(1.08)^3$

⋮

(2006, 31.6)

31.6 mill = x + 5.4% of x since 2001

Let x = pop. in 2001 (in millions of people)

$31.6 = x + .054x = 1.054x \Longrightarrow$

$\frac{31.6}{1.054} = x \approx$

Pop in 2006 is Pop in 2001 + New People

31.6 = x + .054 x

Price + Tax is Price plus tax

? = $3 + (.08)(3$)

31.60 = x + .08 x