Chapter 1 Homework

1.1 #1-137 odd

1.2 #97-113 odd

1.3 #30-57 odd; 97-105 odd; and study properties!

1.4 #1-31 odd

Chapter 2 Homework

2.1 #39-77 odd

2.2 #7-27 odd

2.3 #7-25 odd

2.4 #5,7,11,17,19,23,27

2.5 #35-71 odd

~~2.6 #33-69 odd~~
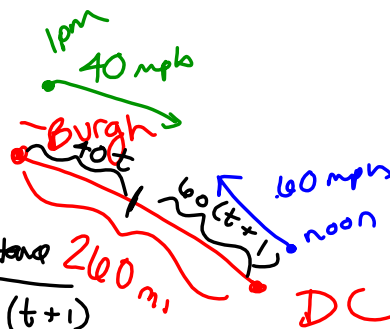
6th period:

2.1–2.5 & Quiz 2 due Monday

Test #1 Tuesday

8th period:

2.1–2.4 & Quiz 2 due Monday

Test #1 Wednesday
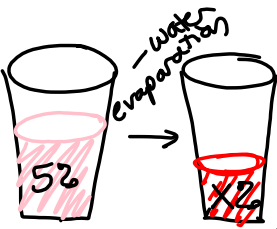
how long after 6
will the trains meet

distance = rate × time

	rate	time	distance
DC → burgh	60	t+1	60 (t+1)
burgh → DC	40	t	40 t

$$60 (t+1) + 40t = 260$$

1pm
40 mph

~burgh
40t

60 (t+1)

60 mph
noon

260 mi

DC

- water evaporation
- 5%

	volume of solution	% concentration	amount of substance
initial juice	12 oz	0.05	12(0.05)
water	2 oz	0	0
final juice	10 oz	X	10X

$$12(0.05) = 10X$$

account	principal (initial) investment	× interest rate	= interest earned (owed)
4.2%	X	0.042	0.042X
6%	13600 − X	0.06	0.06(13600 − X)

$$0.042X = 0.06(13600 - X)$$

stamps	value per stamp	# of stamps	total value of each type
8¢	8	2x	8(2x)
11¢	11	x+3	11(x+3)
18¢	18	x	18x

$$348 = 8(2x) + 11(x+3) + 18x$$

$$x, \; 10-x$$

$\nearrow$ larger $\uparrow$ smaller

$$3x = 8(10-x) - 3$$

distance = rate × time

$$\frac{distance}{rate} = time$$

	dist	rate	time
bike	d	14	$\frac{d}{14}$
walking	d	3.5	$\frac{d}{3.5}$

$$\frac{d}{14} + \frac{d}{3.5} = 1$$

thing	cost per pound	weight	total cost of things
nuts	3.99	X	$3.99x$
pretzels	1.29	$20-x$	$1.29(20-x)$
mixture	2.37	20 lb	$2.37(20)$

$$3.99x + 1.29(20-x) = 2.37(20)$$

coin	number of things	value per thing	total value
nickels	$25-x-x/4$	5	$5\left(25-x-\frac{x}{4}\right)$
dimes	x	10	$10x$
quarters	$x/4$	25	$25\left(x/4\right)$

$$205 = 5\left(25-x-\frac{x}{4}\right) + 10x + 25\left(x/4\right)$$

$$\underset{125-5x-\frac{5x}{4}}{}$$

$$820 = 500 - 20x - 5x + 40x + 25x$$

$$320 = 40x$$

$$8 = x$$

18 mph →

d

$$\frac{d}{10} + 0.5 = \frac{d}{18}$$

10 mph
(0.5 hr head start)
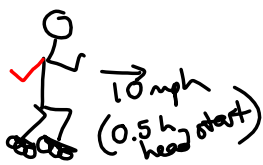
	distance	rate	time
bike	d	18	$d/18$
skate	d	10	$d/10$

2.4 Problems Involving Percent

Important formulas:

| principal (original investment $) | x | interest rate (% written as decimal) | = | interest earned ($) |

principal   x   interest rate   =   interest earned
(original investment $)   (% written as decimal)   ($)

amt of solution   x   % concentration   =   amt of substance
(volume of water mixed   (portion of solution   (volume of just
with dissolved substance)   that is the dissolved   dissolved substance)
                           substance)

18. A chemist mixed 100 ml of an 8% saline solution with 60 ml of a 5% saline solution. Find the percent concentration of the resulting mixture.

thing	amount of solution	% concentration	amount of salt
8% saline sol'n	100 mL	.08	100 (.08)
5% saline sol'n	60 mL	.05	60 (.05)
mixture	160 mL	X	160x

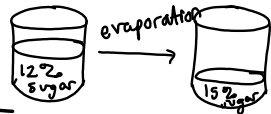$$100(.08) + 60(.05) = 160x$$
$$8 + 3 = 160x$$
$$11 = 160x$$
$$\frac{11}{160} = X$$

$$\boxed{\frac{11}{60} \times 100 \quad \%}$$

26. How much water must be evaporated from 10 gal of a 12% sugar solution in order to obtain a 15% sugar solution?

things	amount of sol'n	% conc.	amt of sugar
12% sol'n	10 gal	.12	10 (.12)
water	x	0	0
15% sol'n	10-x	.15	(10-x)(.15)

$$10(.12) = (10-x)(.15)$$
$$1.2 = 1.5 - .15x$$
$$.15x = 0.3$$
$$x = \frac{0.3}{0.15} = \boxed{2 \text{ gal}}$$

$$\frac{0.30}{0.15} \cdot \frac{100}{100} = \frac{30}{15}$$

A cashier has $730 in twenty-dollar bills and five-dollar bills. In all, the cashier has 68 bills. How many twenty-dollar bills does the cashier have?

thing	value per thing	# of things	total value of all things
$20	20	x	20x
$5	5	68-x	5(68-x)

$$730 = 20x + 5(68-x)$$
$$730 = 20x + 340 - 5x$$
$$390 = 15x$$
$$\frac{390}{15} = x$$

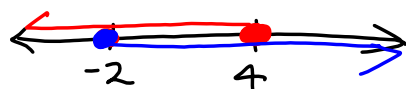$$\frac{26}{15 \overline{\smash{)}390}} \qquad \boxed{26 \ \$20 \text{ bills}}$$

<u>Compound Inequalities</u>

and   ∩   intersection   A ∩ B

x is in both A *and* B

or   ∪   union   A ∪ B

x is in either A *or* B

36. $x - 3 \leq 1$ *and* $2x \geq -4$

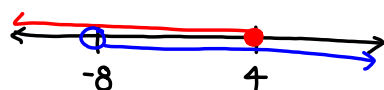$x \leq 4$ ∩ $x \geq -2$

$[-2, 4] = \{x \mid -2 \leq x \leq 4\}$

What if the problem had been...

$x - 3 \leq 1$ *or* $2x \geq -4$

$$3x - 1 \leq 11 \ \ or \ \ 2x + 5 > -11$$

$3x \leq 12 \qquad\qquad 2x > -16$

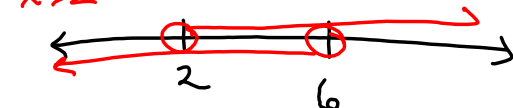$\underline{x \leq 4} \qquad \cup \qquad \underline{x > -8}$

-8   4

$(-\infty, \infty) = \mathbb{R} = \{x \mid x \in \mathbb{R}\}$

52. $5 < 4x - 3 < 21$

$5 < 4x - 3 \quad and \quad 4x - 3 < 21$

$8 < 4x \qquad \cap \qquad 4x < 24$

$2 < x \qquad\qquad\qquad x < 6$

$x > 2$

2   6

$(2, 6) = \{x \mid 2 < x < 6\}$

$$4 < 3x - 5 \le 2x - 10$$

$4 < 3x - 5$ and $3x - 5 \le 2x - 10$

$9 < 3x$ $x \le -5$

$3 < x$

$x > 3$

∅