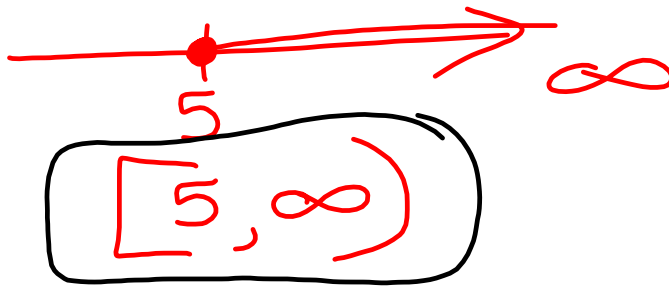16. Rewrite the set in *interval notation*: $\{x|x \geq 5\}$

$[5, \infty)$

17. Rewrite the set in *set-builder notation*: $(-4, 2]$

$\{x | -4 < x \leq 2\}$

21. Translate into a variable expression. Do <u>not</u> simplify.
"the difference between a number and the total of twelve and the square of the number"

$x - (12 + x^2)$

22. Simplify: $4x - 2[x - 4(y - 2[5y + 3])]$

$2x - 72y - 48$

23. Solve for x: $\frac{1}{3}(x - 7) + 5 = 6x + 4$

$x - 7 + 15 = 18x + 12$

$x + 8 = 18x + 12$

$-x - 12 \qquad -x - 12$

$-4 = 17x$

$\dfrac{-4}{17} = x$

1

2.4 Problems Involving Percent

Important formulas:

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

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

6. Two investments earn an annual income of $465. One investment is a 5.5% tax-free annual simple interest account, and the other is a 4.5% annual simple interest certificate of deposit. The total amount invested is $9600. How much is invested in each account?

type of account	principal	interest rate	interest earned
5.5%	X	0.055	0.055x
4.5%	9600-X	0.045	0.045(9600-x)

$$0.055x + 0.045(9600-x) = 465$$

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.

the things	volume of solution	% concent. of salt	amount of salt
8% saline sol'n	100 mL	0.08	0.08(100)
5% saline sol'n	60 mL	0.05	0.05(60)
mixture	160	X	160x

$$0.08(100) + 0.05(60) = 160x$$

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

	amt of solution	% conc. of sugar	amt of sugar
12% sugar soln	10 gal	0.12	10(0.12)
water	X	O	O
15% sugar solution	10-x	0.15	0.15(10-x)

$$10(0.12) = 0.15(10-x)$$

Test #1 on Friday

Ch 1 & 2

	initial inv.	int rate	int earned
42.	X	.04	.04 x
6.5%	6000-X	.065	.065(6000-x)

$$0.04x + .065(6000-x) = .05(6000)$$