Math 20 - Tuesday, 3/7

Week 9

Return Tests to keep

Questions

7.2, 5.1, 5.2

Quiz 7 on Thursday (4.5, 4.6, 7.1) no calculator

Assignment 4 handed out today
due next Tuesday

webwork: 4.5 extended to tonight
7.2 deadline moved to Sunday
7.1 — extend deadline to after parents.

All corrections / recovery work
due next Tuesday, 3/14 (even old stuff)

Questions

square roots

$\sqrt{81} = 9$

$\sqrt{36} = 6$

$\sqrt{.0036} = .06$

$\sqrt{3600} = 60$

$\sqrt{127}$ = between 11 and 12

11.269....

127 is between 121 and 144

.06
.06
.0036

60
60
3600

1	2	3
1	1	
2	4	
3	9	

16

25

36

49...

$-\sqrt{81}$

$= -9$

$-|-3|$

$= 3$

7.1 webwork #3

$\frac{1 \cdot 30}{1 \cdot 30} - \frac{3 \cdot 3}{10 \cdot 3} - \frac{1 \cdot 5}{6 \cdot 5} - \frac{1 \cdot 10}{3 \cdot 10}$ LCD = 30

$\frac{30}{30} - \frac{9}{30} - \frac{5}{30} - \frac{10}{30}$

$30 - 10 = 20$

$20 - 9 = 11$

$11 - 5 = 6$

$= \frac{6}{30}$

$= \frac{1}{5}$

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or

$\frac{3 \cdot 3}{10 \cdot 3} + \frac{1 \cdot 10}{3 \cdot 10} + \frac{1 \cdot 5}{6 \cdot 5}$

$\frac{9}{30} + \frac{10}{30} + \frac{5}{30} = \frac{24}{30} = \frac{4}{5}$

$1 - \frac{4}{5} = \frac{1}{5}$

7.2 Averages - Mean, Median + Mode

Average - Add them all up and divide by how many you have

"Mean"

Median - "Middle"

the middle value of all the numbers

Put the numbers in order first

Mode - "most"

The number that repeats the most.

① Example: # of Credit Hours

4 6 8 4 4 12 12 11 14 4 8 4 11 13 8 4 12

Average: Add up & divide by 17
Mean

$\frac{139}{17} \approx 8.2$ credits rounded to the nearest tenth

Median: Put in order

4 4 4 4 4 4 6 8 8 8 11 11 12 12 12 13 14

↑ 8 credits

half the class is taking 8 or more

half the class is taking 8 or less

used for income house value

US median household income: $51,959
2014

Mode: 4 credits

ex: stocking items
order the most Large size 10

(2) Example : # of Pets

4 0 0 4 0 0 0 6 0 3 1 0 0 5 1 1 0

Average: Mean $\frac{24}{16} = 1.5$ pets

one more decimal place on averages

Median :

0 0 0 0 0 0 0 0 0 1 1 3 4 4.5 6

if there is an even number, average the middle 2

0 pets

take average of the middle 2

$0+0 = \frac{0}{2} = 0$

Mode: 0 pets

Could you have more than 1 mode?

Ex: Candy bar prices

$.59 .59 .99 .99 1.39 .25

2 modes: $.59 and $.99

Also possible to have no mode

Number of Credit Hours you are taking this term

4
6
8
4
4
12
12
11
14
4
8
4
11
13
8
4
12

Number of Pets you have

4
0
0
4
0
0
0
6
0
3
1
0
0
5
1
0

Chapter 5 – Rates, proportions + unit conversions

Section 5.1 : Rates and Ratios

comparison by division

Ratio — no units

Student to teacher ratio

30:1

3 different ways of writing:

- 18:1
- $\frac{18}{1}$
- 18 to 1

Sports

coaches to players

total players to active

home to away

# of practices to # of games

shots made to shots taken

10 : 12

$\frac{10}{12}$

10 to 12

reduce: 5:6

$\frac{5}{6}$ or 5 to 6

Rate — units with "per"

25 miles per hour "speed"

$\frac{25 \text{ miles}}{1 \text{ hour}}$ divide

25 miles ÷ per hour

25 mph unit rate

gas

$2.39/gallon unit rate

$\frac{\$2.39}{1 \text{ gallon}}$

trip

$\frac{\$1,049}{3 \text{ days}}$ $1,049 ÷ 3 per person

$349.67 per day

Unit price

per ounce, per gram, per pound, per serving

Which is a better buy?

64 oz of orange juice for $3.50

22 oz for $2.00

$\frac{\text{price}}{\text{ounces}}$

$\frac{\$3.50}{64 \text{ ounces}} = .054 \approx \$.05/\text{ounce}$

$\frac{\$2.00}{22 \text{ ounces}} = .0909\ldots \approx \$.09/\text{ounce}$

Example:

You travel 65 mph on the freeway

How far can you go in 3 hours

multiply: $3 \cdot 65 = 195$ miles

$\frac{3 \text{ hours}}{1} \cdot \frac{65 \text{ miles}}{1 \text{ hour}} = 195 \text{ miles}$

Section 5.2 : Proportion

Compares 2 fractions

Is this proportion true?

$$\frac{300\text{ mg}}{150\text{ lbs}} \overset{?}{=} \frac{75\text{ mg}}{50\text{ lbs}}$$

$2\text{ mg/lb} \neq 1.5\text{ mg/lb}$ False

$$\frac{300\text{ mg}}{150\text{ lbs}} = \frac{100\text{ mg}}{50\text{ lbs}}$$

If the proportion is true, the cross-products are equal

$$300 \cdot 50 \overset{?}{=} 100 \cdot 150$$

$$15{,}000 = 15{,}000 \quad \text{true}$$

$\frac{4}{8} = \frac{1}{2}$

$4 \cdot 2 = 8 \cdot 1$

$8 = 8$

$\frac{3}{5} = \frac{9}{15}$

$5 \cdot 9 = 3 \cdot 15$

$45 = 45$

$\frac{1}{2} = \frac{1}{2}$

$2 = 2$

$\frac{9}{18} = \frac{35}{70}$

$630 = 630$

Solving proportions

$$\frac{300\ mg}{150\ lbs} = \frac{x}{82\ lbs}$$

x ← variable

how much medication do you need to give?

cross-multiply

$$\frac{300(82)}{150} = \frac{150 \cdot x}{150}$$

$$164\ mg = x$$

I would give my child 164 mg of the medicine

$$\frac{16}{18} = \frac{x}{9}$$

$$\frac{16 \cdot 9}{18} = \frac{18 \cdot x}{18}$$

$$8 = x$$