

Math 099 - Summer 2011 - Test 3

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Name

KEY

Instructions. Only calculators are allowed on this examination. Point values of each problem are indicated. Always use the appropriate wording and units of measure in your answers (when applicable). **SHOW YOUR WORK NEATLY, PLEASE** (no work, no credit).

1. (15pts) Danielle has a part-time job earning \$169.50 for a 30-hour week. If she works a full 40-hour week, how much will she earn?

WE CAN USE A PROPORTION: LET X BE THE FULLTIME PAY

$$\frac{169.50}{30} = \frac{X}{40} \rightarrow X = (40) \frac{169.5}{30} = 226$$

PAY RATE

FULL TIME PAY IS 226 DOLLARS

2. (10pts) From our last test we have the following percents: 80, 72, 98, 65, 88, 90, 78, 77, 84. What are the median and the average percents?

WE COULD USE OUR CALCULATOR:

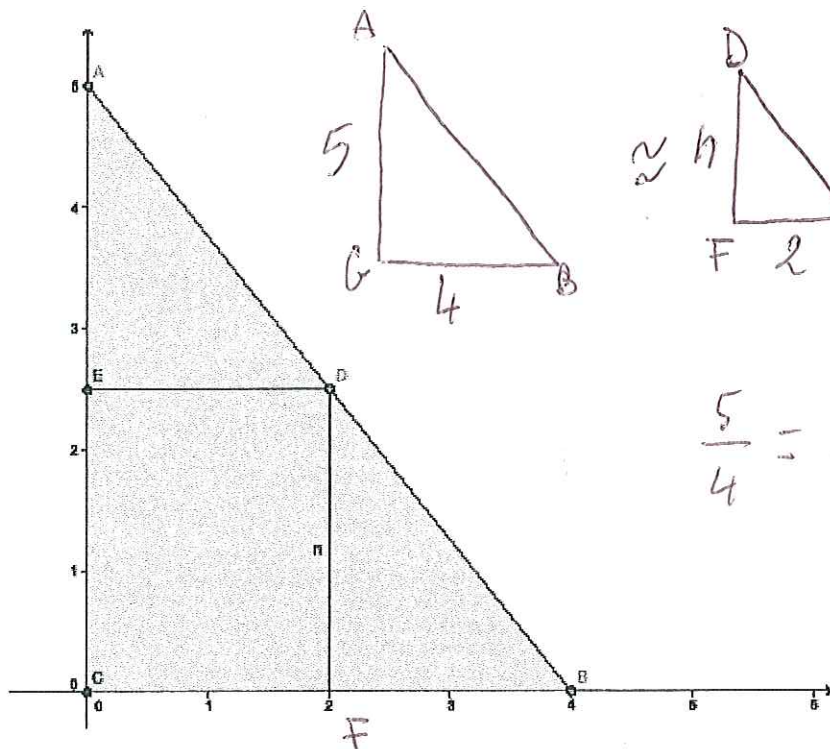
$$\text{MEAN} = \frac{80 + 72 + 98 + 65 + 88 + 90 + 78 + 77 + 84}{9} = 81 \frac{1}{3}$$

$$\text{MEDIAN} (98, 90, 88, 84, 80, 78, 77, 72, 65) = 80$$

3. (10pts) Solve the proportion $\frac{12}{m} = \frac{18}{m+2}$.

Cross multiply: $12(m+2) = 18m \rightarrow 12m + 24 = 18m$
 $\quad\quad\quad -12m \quad\quad\quad -12m$
 $\hline 24 = 6m \rightarrow m = 4$
 $\hline 6 \quad \hline 6$

4. (10pts) Use proportions to find n .



$$\frac{5}{4} = \frac{n}{2} \rightarrow n = 2\left(\frac{5}{4}\right)$$

$$\rightarrow n = \frac{5}{2} = 2.5$$

5. (15pts) Jane brakes her piggy bank. She finds 145 coins, in dimes and quarters, for a total value of \$26.5. Jane is eight and she is happy for that. How many of each coins does she have? (You can use a quantity-rate table)

Item	Q	R #/¢	Q · R
DIMES	X	.10	.10X
QUARTERS	145-X	.25	.25(145-X)
TOTALS			26.5

$$\begin{aligned}
 .10X + .25(145-X) &= 26.5 \\
 .10X + 36.25 - .25X &= 26.5 \\
 -36.25 & \quad -36.25
 \end{aligned}$$

$$\begin{aligned}
 \frac{-.15X}{-.15} &= \frac{-9.75}{-.15} \rightarrow X = 65 \\
 \text{QUARTERS} &= 145 - 65 = 80
 \end{aligned}$$

JANE HAS 65 DIMES AND 80 QUARTERS

6. (10pts) Find the slope and the y-intercept for the equation $3x - 8y = 13$.

SOLVE FOR Y:

$$\begin{aligned}
 3X - 8Y &= 13 \\
 -3X & \quad -3X
 \end{aligned}$$

$$\begin{aligned}
 -8Y &= -3X + 13 \\
 \frac{-8Y}{-8} &= \frac{-3X}{-8} + \frac{13}{-8}
 \end{aligned}$$

$$Y = \frac{3}{8}X - \frac{13}{8}$$

$$\text{SLOPE} = \frac{3}{8}$$

$$\text{Y-INTERCEPT} \left(0, -\frac{13}{8} \right)$$

7. Write the equation of each straight line described.

(a) (10pts) Through $(1, -2)$ and $(-1, 1)$.

$$\text{SLOPE} = \frac{-2 - 1}{1 - (-1)} = \frac{-3}{2} = -\frac{3}{2} \rightarrow y = -\frac{3}{2}x + b$$

$$\text{PLUG } x = -1, y = 1: \quad 1 = \underset{-3/2}{-\frac{3}{2}(-1)} + \underset{-1/2}{b} \rightarrow b = -\frac{1}{2}$$

$$y = -\frac{3}{2}x - \frac{1}{2}$$

(b) (10pts) Through $(0, -1)$ and perpendicular to the line with equation $y = -3x + 4$.

$$\text{PERPENDICULAR LINES, SLOPE} = \frac{1}{m} = -\frac{1}{-3} = \frac{1}{3}$$

$$(0, -1) \text{ IS THE } y\text{-INTERCEPT} \rightarrow y = \frac{1}{3}x - 1$$

(c) (10pts) Horizontal through $(3, 2)$.

$$\text{HORIZONTAL LINE: } y = b \rightarrow y = 2$$