Math 111 Second Probability Worksheet

Names: SOLUTIONS

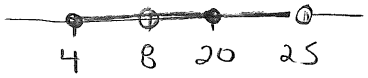
1. Express as a single fraction (does not need to be reduced):

(a) $1-\frac{3}{8} = \frac{8}{8} - \frac{3}{8} = \boxed{\frac{5}{8}}$

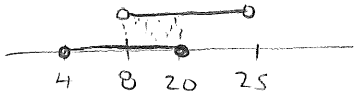
(b) $\frac{1}{3}+\frac{2}{5} = \frac{1}{3}\cdot\frac{5}{5} + \frac{2}{5}\cdot\frac{3}{3} = \frac{5}{15} + \frac{6}{15} = \boxed{\frac{11}{15}}$

(c) $2\frac{5}{9} = 2 + \frac{5}{9} = \frac{2}{1}\cdot\frac{9}{9} + \frac{5}{9} = \frac{18}{9} + \frac{5}{9} = \boxed{\frac{23}{9}}$

2. Graph each on a number line, and express each interval in the simplest possible form.

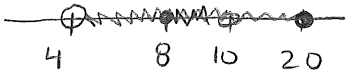
(a) $[4,20]\cup(8,25)$ 

$= \boxed{[4,25)}$

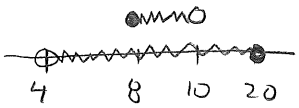
(b) $[4,20]\cap(8,25)$ 

$= \boxed{(8,20]}$

nested

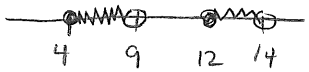
(c) $(4,20]\cup[8,10)$ 

$= \boxed{(4,20]}$

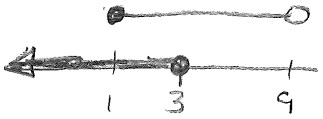
(d) $(4,20]\cap[8,10)$ 

$= \boxed{[8,10)}$

disjoint

(e) $[4,9)\cup[12,14)$ → doesn't simplify 

(f) $[4,9)\cap[12,14)$ → empty set, $\boxed{\phi}$ or $\boxed{\{\}}$

(g) $(-\infty,3]\cap[1,9)$ 

$= \boxed{[1,3]}$

(h) $[3,9]\cup(1,\infty)$ 

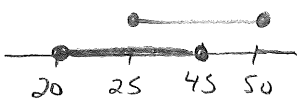
$= \boxed{(1,\infty)}$

3. Suppose we choose a real number at random (all equally likely) from the interval $[10,60]$.
Find the probability that our number is in

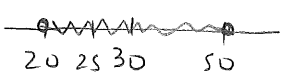
length → 50

(a) $[20,35]$ $\frac{35-20}{60-10} = \boxed{\frac{15}{50}}$

(b) $[15.3, 42.9]$ $\frac{42.9-15.3}{50} = \boxed{\frac{27.6}{50}}$

(c) $[20,45]\cap[25,50]$ 

interval is $[25,45]$, length 20
probability is $\boxed{\frac{20}{50}}$

(d) $[20,30]\cup[25,50]$ 

interval is $[20,50]$ length 30
probability is $\boxed{\frac{30}{50}}$