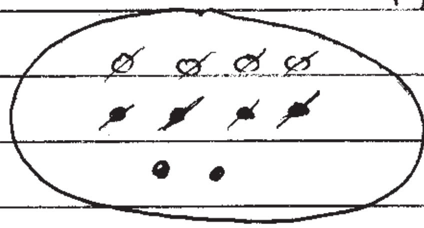
Review for Exam 3

$-4+6$

(1) (a)

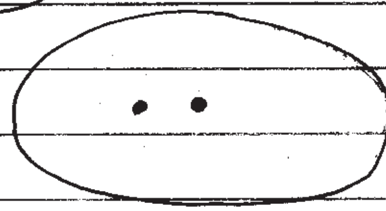


● = pos

o = neg

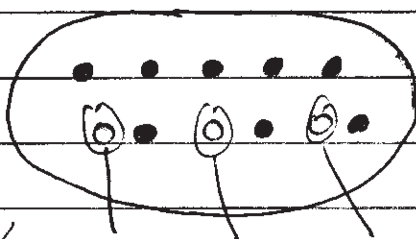
/ = cancelled out

=



= 2

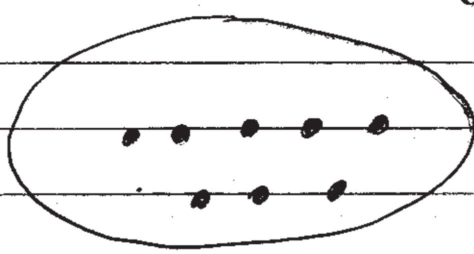
(b)



~~= 5~~

$5-(-3)$

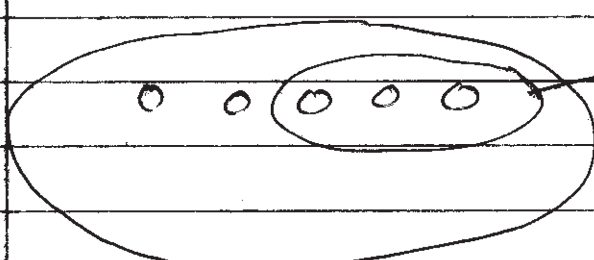
Take away -3



= 8

(c) $(-5)-(-3)$

take away



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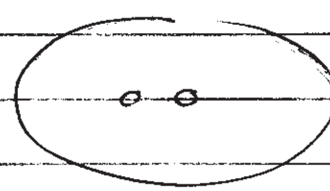
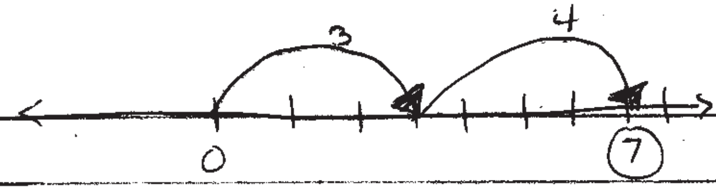
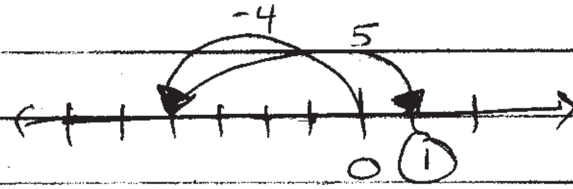


= -2

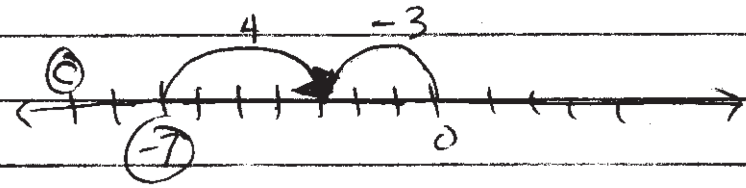
(2) (a)



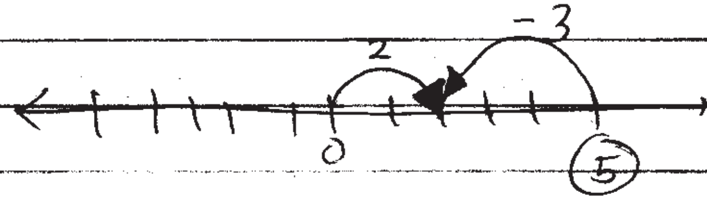
(b)



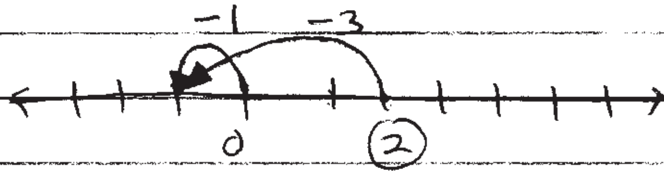
(c)



(d)



(e)



(3) (a) You Get a check for $41 and get bill for $7.

(b) You Get a check for $41 and he takes a check for $7.

(c) You Get a check for $20 and he takes a bill for $15.

(d) He Takes a check for $20 and he takes a check for $15.

(4)

(4) (a) Mailman brings you two bills for \$4 and brings you 3 checks for \$7.

(b) Mailman brings you three bills for \$5 and takes 3 checks for \$8.

(c) Mailman brings you four checks for \$5 and takes 7 bills for \$21.

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(5) (a) $5 +_{12} 9 = 14 = 2$

(b) $7 -_{12} 9 = 10$

$12 - 9 = 3$

(c) $8 \times_{12} 5 = 40 = 4$

$$\begin{array}{r} 3 \\ 12 \overline{)\,40} \\ \underline{36} \\ 4 \end{array}$$

(d) $5 \div_{12} 7 = 11$ (because $11 \neq 5$ and $11 \neq 7$)

$5 \times_{12} 7 = 35 = 11$

$$\begin{array}{r} 2 \\ 12 \overline{)\,35} \\ \underline{24} \\ 11 \end{array}$$

6. You can multiply two nonzero numbers using clock arithmetic and get 0. Here are 3 examples.

Ex 1: $6 \times_{12} 4 = 24 = 0$

$$12 \overline{)24} = 2,\quad 24 - 24 = 0$$

Ex 2: $3 \times_{12} 4 = 12 = 0$

$$12 \overline{)12} = 1,\quad 12 - 12 = 0$$

Ex 3: $6 \times_{12} 6 = 36 = 0$

$$12 \overline{)36} = 3,\quad 36 - 36 = 0$$

7. a) $10 \div_{12} 7 = 10$ but b/c $10 = 10$ this is undefined.

$10 \times_{12} 7 = 70 = 10$

$$12 \overline{)70} = 5,\quad 70 - 60 = 10$$

b) $10 \div_{12} 2 = 8$ Since $8 \neq 10$ & $8 \neq 2$ the answer is 8

$10 \times_{12} 2 = 20 = 8$

$$12 \overline{)20} = 1,\quad 20 - 12 = 8$$

8 (a) $\frac{5}{16}$ $\boxed{<}$ $\frac{11}{32}$

5×32 $\boxed{<}$ 11×16

160 $\boxed{<}$ 176 ← (fill in this box 1st)

(b) $\frac{7}{8}$ $\boxed{>}$ $\frac{7}{9}$

7×9 $\boxed{>}$ 7×8

63 $\boxed{>}$ 56

(c) $\frac{10}{11}$ $\boxed{>}$ $\frac{11}{13}$

10×13 $\boxed{>}$ 11×11

130 $\boxed{>}$ 121

9 Notice that we can get a common denominator for $\frac{a}{b}$ and $\frac{c}{d}$.

$$\frac{a}{b} \times \frac{d}{d} = \frac{ad}{bd}$$

$$\frac{c}{d} \times \frac{b}{b} = \frac{bc}{bd}$$

So to compare

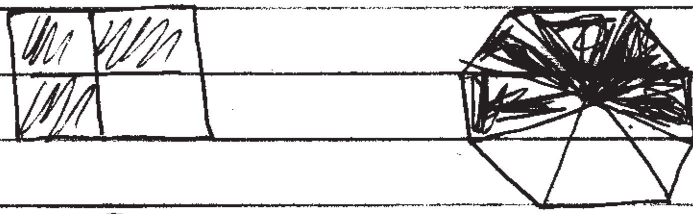
$\frac{a}{b}$ $\boxed{\phantom{<}}$ $\frac{c}{d}$ it is the same as

$\frac{ad}{bd}$ $\boxed{\phantom{<}}$ $\frac{bc}{bd}$ and because we know $ad \boxed{<} bc$

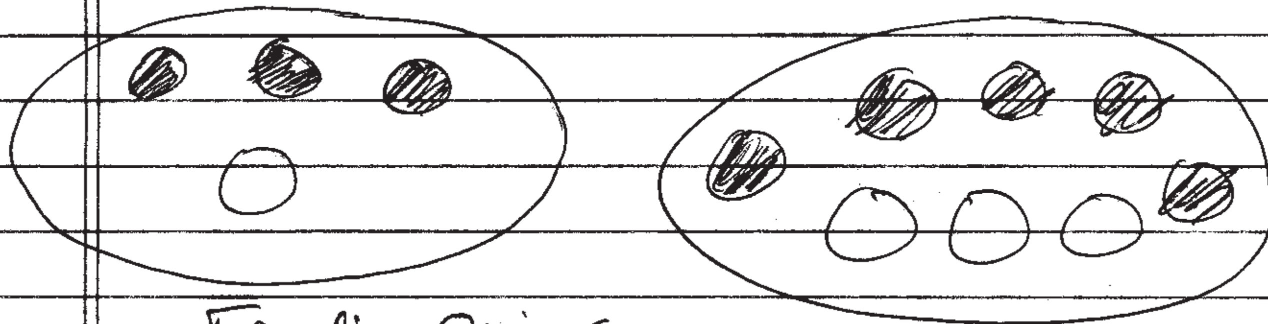
We have $\frac{ad}{bd}$ $\boxed{<}$ $\frac{bc}{bd}$ $\Rightarrow$ $\frac{a}{b}$ $\boxed{<}$ $\frac{c}{d}$.

$\square$

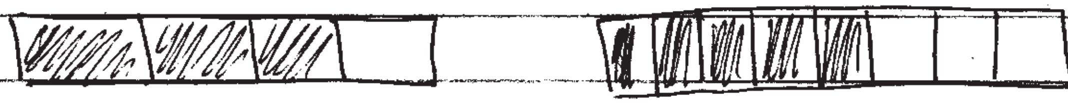
(10) Colored REGIONS



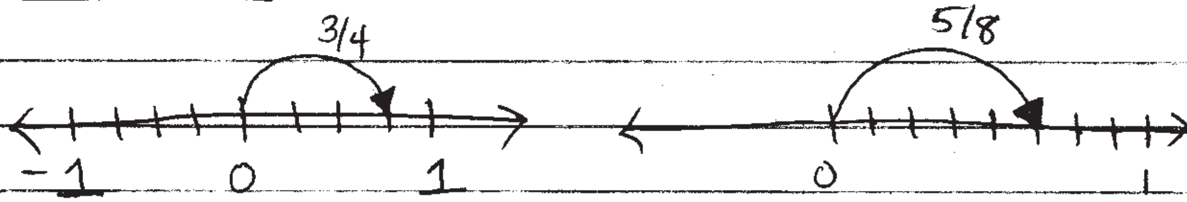
Sets



Fraction Strips



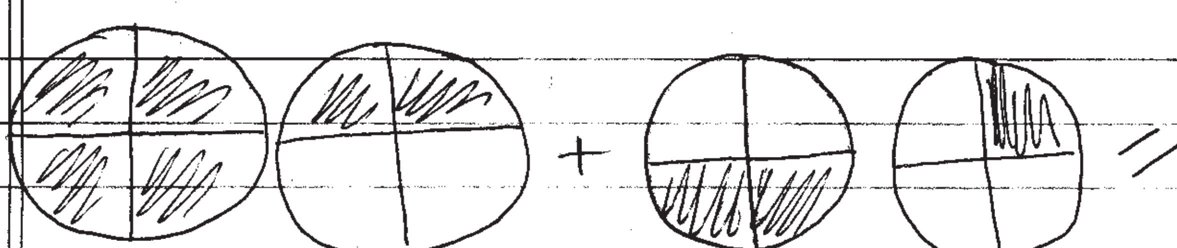
Line

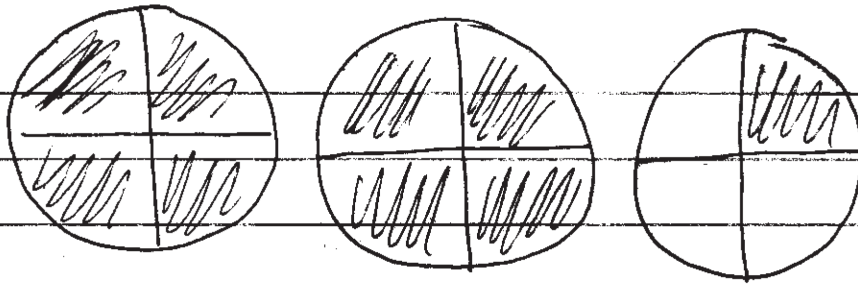


(11) I only do one for each:

colored Regions

$3/2 + 3/4$

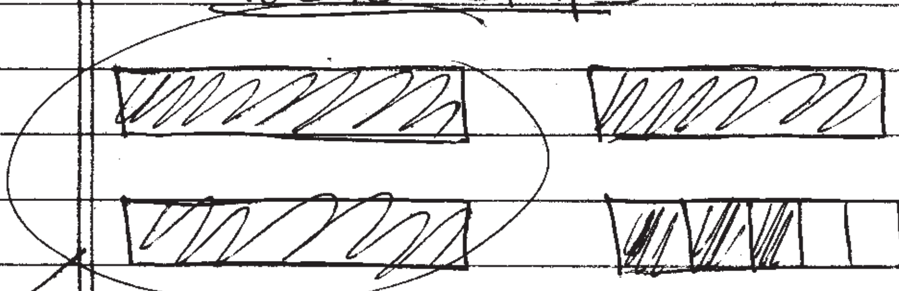




$= 2\frac{1}{4}$

$= \frac{9}{4}$

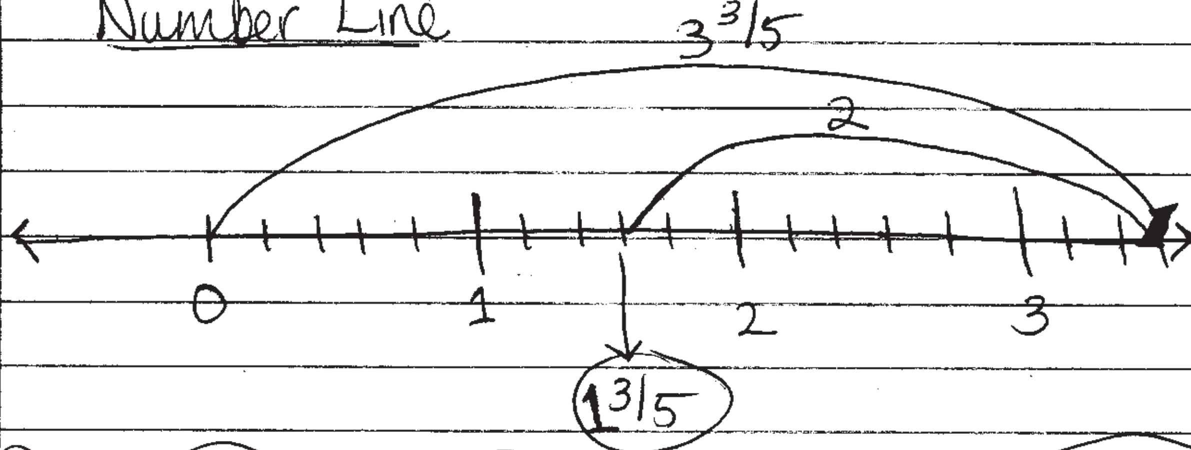
Fraction Strips:



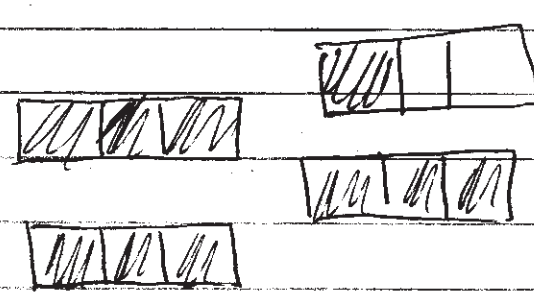
← Take away 2

$= 1\frac{3}{5}$

Number Line



12 $\frac{10}{3} = \left(\begin{array}{r} 3 \\ 3\overline{)10} \\ \underline{9} \\ 1 \end{array} \right) = 3\frac{1}{3} =$

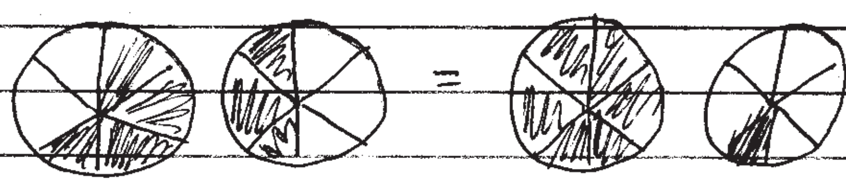


$3\frac{2}{3} = \frac{(3\times 3)+2}{3} = \frac{11}{3}$

$= 11/3$

#13 I leave out the explanations. You fill that in.

ⓐ $\frac{2}{3} + \frac{1}{2} = \frac{2}{3}\times\frac{2}{2} + \frac{1}{2}\times\frac{3}{3} = \frac{4}{6} + \frac{3}{6} = \frac{7}{6}$



ⓑ $5/6 - 3/4 = \frac{5}{6}\times\frac{2}{2} - \frac{3}{4}\times\frac{3}{3} = \frac{10}{12} - \frac{9}{12} = \frac{1}{12}$

ⓒ $2\,3/5 = \frac{(2\times 5)+3}{5} = \frac{13}{5}$

ⓓ $\frac{17}{3}$

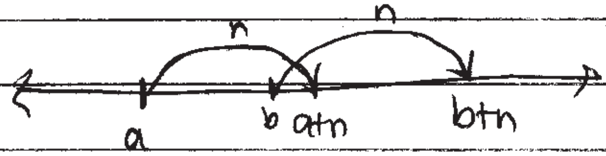
$$\begin{array}{r} 5 \\ 3\overline{)17} \\ \underline{15} \\ 2 \end{array}$$

$= 5\,2/3$

#14 $5{,}232 = 5\times 1000 + 2\times 100 + 3\times 10 + 2\times 1$

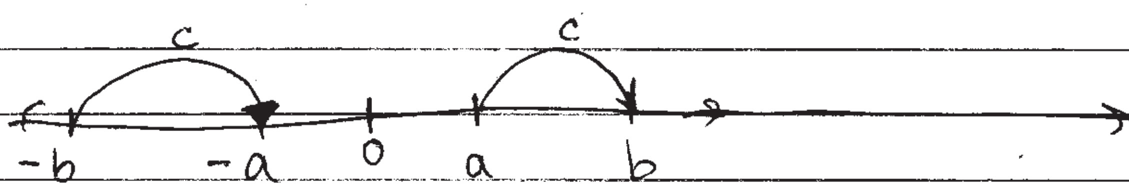
#15 If $a < b$ then we have

So this means $a+n$ & $b+n$ look like



So we see $a+n < b+n$

Now, if c is the difference between a and b we have



So we see that $-b < -a$.
(Because $-b$ is b's reflection about 0.)

#16 The fractions a/b and c/d are equivalent if and only if $ad = bc$

#17 $\frac{396}{432} = \frac{\cancel{2^2}\cdot\cancel{3^2}\cdot 11}{2^{\cancel{4}\,2}\cdot 3^{\cancel{3}}} = \frac{11}{4\cdot 3} = \frac{11}{12}$

I know I am done because the numerator is positive and $\gcd(11,12)=1$

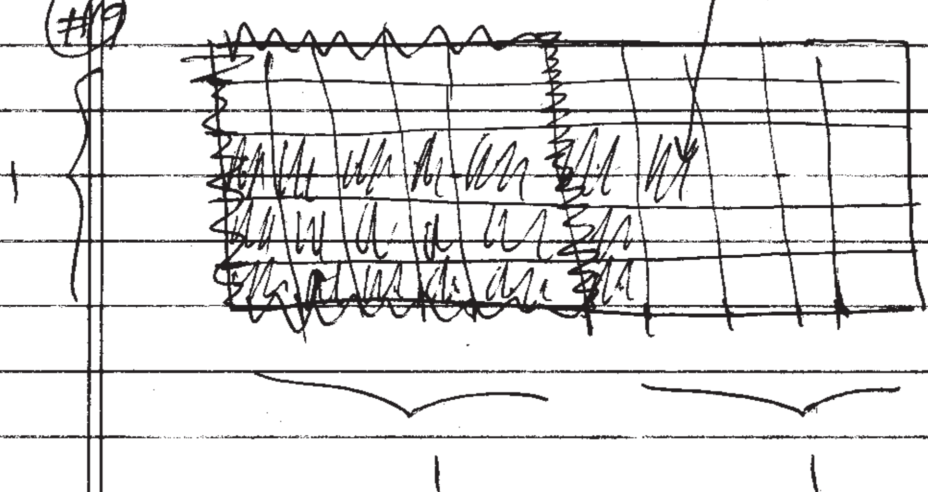
#18 First, notice that 9 is a multiple of 3 so we can just leave $\frac{5}{9}$ alone.

Then, to make $\frac{2}{3}$ a fraction with 9 on the bottom we multiply by $1 = \frac{3}{3}$.

$\frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$. So our two fractions are $\frac{6}{9}$ & $\frac{5}{9}$.

(this shouldn't be colored, sorry!)

#19



18 colored
25 squares in a unit

$\frac{18}{25}$

#20 If 3/7 of 14 balls are yellow, then 3/7 x 14 balls are yellow. This is 42/7 = 6 yellow balls. Since there are 14 total balls, there are 14 − 6 = 8 that are not yellow.

8

#21 If Sean can mow $\frac{5/6 \text{ acre}}{1 \text{ hour}}$.

So if we want the ratio to stay the same, set

$$\frac{5/6 \text{ acre}}{1 \text{ hr}} = \frac{3 \text{ acre}}{x \text{ hrs}}$$

$5/6\, x = 3$ To solve divide by $5/6$

(or multiply by $6/5$ on both sides)

$\cancel{6}/5 \times 5/\cancel{6}\, x = 3 \times 6/5$

$x = 18/5$ hours

#22 This is worked in the book.