Chapter 3: Rational Numbers

Hints for Exam:

To list or compare decimals, remember to add a zero to the end of your decimal.

Example 3.210 3.220

To list or compare fractions, remember use common denominators.

Example $-\frac{1}{3}$ $-\frac{3}{5}$

$\times 5$ $\times 3$

$-\frac{5}{15} > -\frac{9}{15}$

-5 is bigger than -9

Mixed to Improper

$-3\frac{1}{6} = \frac{-(3 \times 6)+1}{6} = \frac{-19}{6}$

Improper to Mixed

$\frac{36}{5} = (36 \div 5) = 7.? = 7\frac{1}{5}$

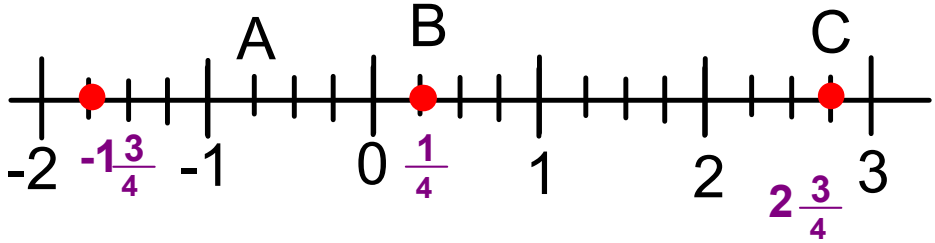
$(7 \times 5) = 35 + (1) = 36$

Number line

- Determine the last integer you passed to get to the whole number in front of the fraction

-Count the number of bumps in between integers to get the denominator of the fraction

-To get the numerator count how far away you are from the last integer you passed.



Hints for Exam:

Subtracting a Negative

-add the opposite

$-8 - (-5)$

$= -8 + 5$

$= -3$

To add and subtract fractions you need common denominators

1) $\frac{-1}{4} + \frac{5}{7}$

$= \frac{-7}{28} + \frac{20}{28}$

$= \frac{13}{28}$

ALWAYS REDUCE WHEN POSSIBLE

2) $-2\frac{1}{3} - 3\frac{2}{5}$

$= \frac{-7}{3} - \frac{17}{5}$

$= \frac{-35}{15} - \frac{51}{15}$

$= \frac{-86}{15}$

$= -5\frac{11}{15}$

Hints for Exam:

To Multiply fractions: $\frac{\text{top x top}}{\text{bottom x bottom}}$

DO NOT use COMMON DENOMINATORS

1) $\frac{-1}{3} \times \frac{6}{5}$

$= \frac{(-1 \times 6)}{(3 \times 5)}$ Simplify

$= \frac{(-1 \times 2)}{(1 \times 5)}$

$= \frac{-2}{5}$

ALWAYS REDUCE WHEN POSSIBLE

2) $2\frac{1}{3} \times -2\frac{2}{5}$

$= \frac{7}{3} \times \frac{-12}{5}$ Simplify

$= \frac{(7 \times -4)}{(1 \times 5)}$

$= \frac{-28}{5}$

Question was in mixed so answer should be in mixed

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

Solve for unknowns: (Hint: $3 \times \boxed{4} = 12$)

$\square = 12 \div 3$

Example

$\square \times \frac{1}{2} = \frac{4}{3}$

$\square = \frac{4}{3} \div \frac{1}{2}$

$\square = \frac{4}{3} \times \frac{2}{1}$

$\square = \frac{8}{3}$

Hints for Exam:

To DIVIDING fractions: FLIP AND MULTIPLY

DO NOT use COMMON DENOMINATORS

1) $\frac{-2}{7} \div \frac{3}{10}$ FLIP

$= \frac{-2}{7} \times \frac{10}{3}$

$= \frac{(-2 \times 10)}{(7 \times 3)}$ Simplify if possible

$= \frac{-20}{21}$

ALWAYS REDUCE WHEN POSSIBLE

2) $5\frac{1}{4} \div -1\frac{2}{3}$ FLIP

$= \frac{21}{4} \div \frac{-5}{3}$

$= \frac{21}{4} \times \frac{-3}{5}$ Simplify if possible

$= \frac{(21 \times -3)}{(4 \times 5)}$

$= \frac{-63}{20}$

Question was in mixed so answer should be in mixed

$= -3\frac{3}{20}$

Solve for unknowns:

(Hint: $\boxed{15} \div 3 = 5$)

$\square = 3 \times 5$

Example

$\square \div \frac{2}{3} = \frac{1}{5}$

$\square = \frac{2}{3} \times \frac{1}{5}$

$\square = \frac{2}{15}$

(Hint: $15 \div \boxed{3} = 5$)

$\square = 15 \div 5$

Example

$\frac{2}{15} \div \square = \frac{1}{5}$

$\square = \frac{2}{15} \div \frac{1}{5}$

$\square = \frac{2}{15} \times \frac{5}{1}$

$\square = \frac{2}{3} \times \frac{1}{1}$

$\square = \frac{2}{3}$

Hints for Exam:

as they appear

B	E	D	M	A	S
r	x	i	u	d	u
a	p	v	l	d	b
c	o	s	t		t
k	n	i	i		r
e	e	d	p		a
t	n	e	l		c
	t		y		t

Example

$$\left(\frac{2}{5}\right)^2 \div \left(\frac{2}{3} + \frac{4}{5}\right)$$

$$= \left(\frac{2}{5}\right)^2 \div \left(\frac{10}{15} + \frac{12}{15}\right)$$

$$= \left(\frac{2}{5}\right)^2 \div \left(\frac{22}{15}\right)$$

$$= \left(\frac{4}{25}\right) \div \left(\frac{22}{15}\right)$$

$$= \left(\frac{4}{25}\right) \times \left(\frac{15}{22}\right)$$ Simplify

$$= \left(\frac{2}{5}\right) \times \left(\frac{3}{11}\right)$$

$$= \left(\frac{6}{55}\right)$$