

med = 732/290

$$\frac{150}{150}$$

Key



1. [5 pts] Explain which part of a fraction cannot be zero, referring to one of the "part of" meanings of a fraction.

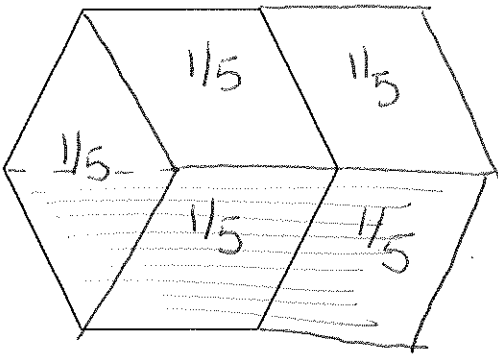
- (4) no exp. not fractions
- (1) keep mem. of denom. or not of whole.
- (2) subtraction

The denominator can't be zero because ...
 ... you can't cut the whole into zero pieces.
 OR ... you can't keep some out of every zero objects.

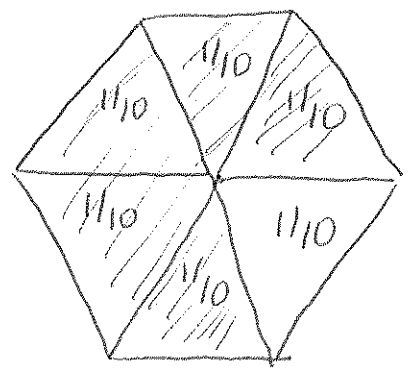
AMBIGUOUS - I corrected orally except for sure. will grade or orbit as needed.

2. [8 pts] If the hexagon below represents the fraction 3/5, draw one that represents the fraction 1/2. Clearly indicate your answer, but you need not explain.

- (8)  or 



or



(3) decimal numerator or denom.

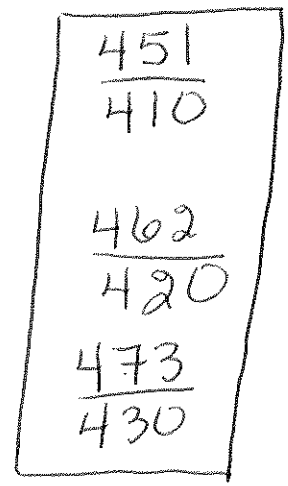
3. [5 pts] Find a fraction that is equivalent to $\frac{286}{260}$ but whose numerator is between 445 and 475. Show clear work.

- (3) $\frac{458}{416}, \frac{457}{416}$
- (3) FLF w/ bad fraction.

$$\frac{286}{260} = \frac{11}{10} =$$

$$\frac{41}{41}$$

or



or

17
17

4. [5 pts] Which is larger, $\frac{50}{61}$ or $\frac{5}{6}$? Justify your answer.

-2) Post reference to answer.
-4) lost ref. to size

$$\frac{50}{61} < \frac{5}{6}$$

↑

$$300 < 305$$

$$\frac{50}{61} \text{ vs. } \frac{50}{60}$$

Both have the same number of pieces, but 60ths are fatter.

$\frac{5}{6}$ is larger.

$\frac{5}{6}$ is larger.

5. [4 pts] Subtract entirely in mixed number notation: $8\frac{1}{3} - 3\frac{5}{7}$.

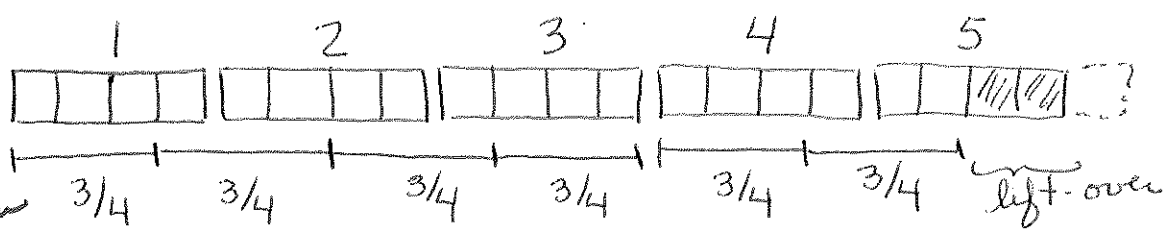
$$8\frac{1}{3} - 3\frac{5}{7}$$

$$8\frac{7}{21} - 3\frac{15}{21}$$

$$- 3\frac{15}{21}$$

$4\frac{13}{21}$

6. [8 pts] Draw a diagram representing $5 \div \frac{3}{4}$ as a division problem. Clearly explain how your diagram shows the entire answer, including any "remainder."



-5) wrong remainder
-1) didn't explain 6.

There are 6 entire $\frac{3}{4}$ and 2 out of 3 pieces needed for the next set (of $\frac{3}{4}$).

So, there are $6\frac{2}{3}$ of them in 5.

7. [6 pts - 2 each] Write the complete name (for instance, "_____ Property of Multipli-
cation") of the property best illustrated in each number sentence below. Spell correctly.

(-2) wrong property
(-1) spelling

(a) $3 \cdot (\frac{1}{2} + \frac{2}{3}) + (4 \cdot \frac{1}{5}) \cdot \frac{5}{6} = 3 \cdot (\frac{1}{2} + \frac{2}{3}) + 4 \cdot (\frac{1}{5} \cdot \frac{5}{6})$

Associative Property of Multiplication

(b) $3 \cdot (\frac{1}{2} + \frac{2}{3}) + (4 \cdot \frac{1}{5}) \cdot \frac{5}{6} = 0 + 3 \cdot (\frac{1}{2} + \frac{2}{3}) + (4 \cdot \frac{1}{5}) \cdot \frac{5}{6}$

Identity Property of Addition

(c) $3 \cdot (\frac{1}{2} + \frac{2}{3}) + (4 \cdot \frac{1}{5}) \cdot \frac{5}{6} = (\frac{1}{2} + \frac{2}{3}) \cdot 3 + (4 \cdot \frac{1}{5}) \cdot \frac{5}{6}$

Commutative Property of Multiplication

8. [8 pts] The recipe for tropical party punch calls for 2 parts 7-Up, 1 part pineapple juice, 1/2 part coconut milk, and 1/4 part cherry extract. If you want to make $22\frac{1}{2}$ gallons of the punch altogether, how many gallons of cherry extract do you need? Show clear work.

(-2) some scaling.
(-2) "magic 6"
(-6) 1/4 of 22 1/2.

	Ratio	Actual
7-Up	2	
pineapple	1	
coconut	1/2	
cherry	1/4	x
total	3 3/4	22 1/2

$\frac{25}{3.75} = \frac{x}{22.5}$

$3.75x = 5.625$
 $x = 1.5 \text{ gal.}$

(-3) one
(-1) each bad clue

9. [6 pts] Find two different decimal numbers that each satisfy all of the following clues:

- The digit in the 10^0 position equals the digit in the 10^{-2} position.
- Rounded to the nearest ten, the number is 40.
- The digit in the tenths position is 8 less than that in the ones position.

$\frac{3}{8,9} = \frac{0,1}{8,9}$
8 less than

38.08
39.19

22
92

10. [8 pts] Divide by hand, then explain thoroughly why the decimal point in the dividend is moved as it is: $0.07 \div 0.35$.

- 3 wrong answer.
- 3 no FLF
- 2 no hour
- 2 FLF applies.

$$35 \overline{) 0.070} \quad \cdot 2$$

Move the dividend's point "to match" because of the FLF;

$$\frac{0.07}{0.35} \times \frac{100}{100} = \frac{7}{35} > 2 \text{ positions each.}$$

11. [14 pts - 3 or 5 each] Convert as indicated; if not possible, say so.

5 (a) $1.45\bar{7}$ to a fraction

$$\begin{aligned} \xrightarrow{\times 100} 145.\bar{7} &= 145\frac{7}{9} \\ &= \frac{1312}{9} \xrightarrow{\div 100} \end{aligned}$$

$$\frac{1312}{900}$$

3 (b) $1.45\bar{7}$ to a percent, rounded to the nearest tenth of a percent

-1 145.790

$$145.8\%$$

3 (c) 6.83% to a fraction

- 2 0.0683
- 2 683/100
- 2 bad 0's.

$$0.0683 =$$

$$\frac{683}{10,000}$$

3 (d) $\frac{7}{18}$ to a decimal; do not round

-3 round

$$.3\bar{8}$$

12. [5 pts] Create an irrational number that is between $\frac{28}{33}$ and $0.\overline{848}$.

(1) lost...
 (2) intended rational.
 (3) use irregular pattern

$$\frac{28}{33} = .8484848\dots$$

$$0.\overline{848} = .848848\dots$$

$$.8486166616661\dots$$

(various)

13. [6 pts] Robert's retirement was worth \$117,750 last year. This year, it is only worth \$98,920. By what percent did it decrease? Round to the nearest tenth of a percent.

(1) 15.99%
 (2) 117750 ÷ 18830

$$\begin{array}{r}
 \$117,750 \\
 - \$98,920 \\
 \hline
 \$18,830
 \end{array}$$

$$\frac{18830}{117750} = .159915\dots$$

$$= 16.0\%$$

14. [6 pts] Kelly paid \$45.78 for a dress marked 20% off. What was the original price of the dress?

(4) 120% of 45.78.

$$45.78 = 80\% \text{ of price}$$

$$\frac{45.78}{.8} = \$57.23$$

15. [6 pts - 2 each] Circle the best type of statistical graph for displaying each type of information below.

(a) The average temperature each day of the past month

circle graph line graph bar graph

(b) The number of residents in each age bracket at a city apartment complex

histogram stem-and-leaf plot line graph

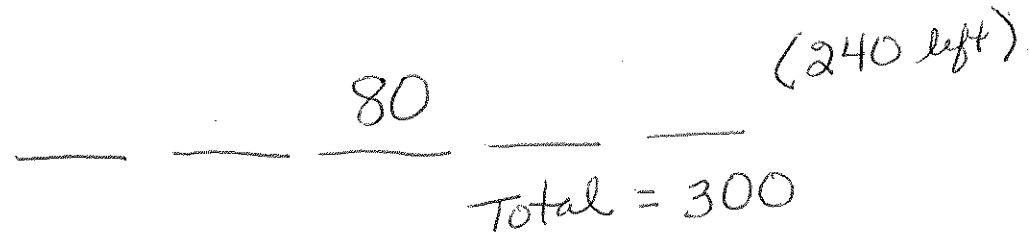
(c) The number of children who like certain flavors of ice cream

circle graph pictograph box-and-whisker plot

16. [8 pts - 4 each] Create your own set of five scores from 0 to 100 (inclusive) satisfying each set of conditions below. If not possible, explain why in 1-2 sentences.

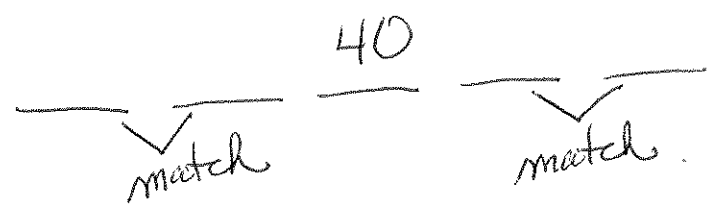
(a) The mean is 60 and the median is 80.

-3 80 is highest.
-2 80 2nd high.



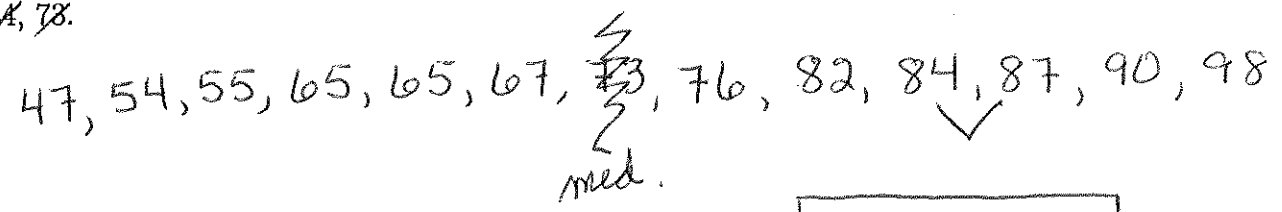
(b) There are two modes and the median is 40.

-3 1 mode.



17. [4 pts] Find the upper quartile for these scores: 54, 47, 98, 76, 67, 65, 55, 87, 90, 65, 82, 84, 78.

-4 not even median.
-3 n = 73
UQ = set



UQ = 85.5

18. [10 pts - 2 or 4 each] An experiment consists of spinning a spinner marked 3, 5, 6 in equal sections and then rolling an ordinary die.

(a) List the members of a uniform sample space for this experiment. (spin #, die #)

- (3,1) (3,2) (3,3) (3,4) (3,5) (3,6)
 (5,1) (5,2) (5,3) (5,4) (5,5) (5,6)
 (6,1) (6,2) (6,3) (6,4) (6,5) (6,6)

(b) What is the probability that the number on the die is at least as large as the number on the spinner?

$\frac{7}{18}$

(c) What is the probability that the sum is 8 and you got a two or three on one of the objects?

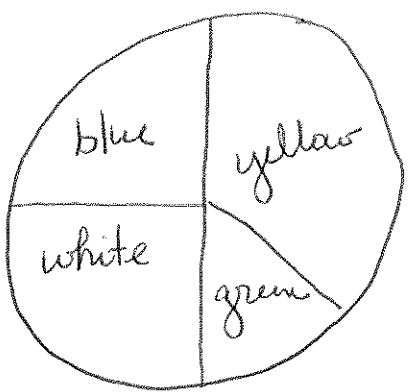
$\frac{3}{18}$

(d) What is the probability that the sum is 8 given that you got a two or three on one of the objects?

$\frac{3}{10}$ (or $\frac{3}{8}$ is okay)

19. [5 pts] Draw a spinner that simultaneously satisfies all these conditions:

- The probability of landing on red, yellow, blue, green, or white is 1.
- The probability of landing on a color in the American flag is 1/2.
- The probability of landing on yellow is twice that of landing on green.
- At least one color has a probability of 0.



(various)

① $\frac{8}{18}$

② $\frac{10}{18}$

③ $\frac{3}{9}$



23
23

20. [5 pts] Forty-eight employees at Hudson Inc have a mean age of 46.2 years. Six retire; these six have a mean age of 62.1 years. What is the mean age of the remaining employees, to the nearest tenth? Show clear work.

① Rounding
② 2217.6

Total = $48(46.2) = 2217.6$
Retiree total = $6(62.1) = 372.6$

new total = 1845
mean = $\frac{1845}{42} =$

43.9

21. [6 pts - 3 each] A security code consists of three digits followed by two letters.

(a) How many codes do not use the letter Z and do not repeat digits or letters?

① 10³
② 25²

10 · 9 · 8 · 25 · 24

(b) How many codes have all three digits the same and do not repeat letters?

① 1 · 1 · 1
② 10³

10 · 1 · 1 · 26 · 25

22. [8 pts - 2 each] Circle the most reasonable measurement:

(a) The temperature outdoors on a nice summer day:

85° C

15° C

35° C

105° C

(b) The distance from here to Pittsburgh:

50 km

100 km

5 km

1000 km

(c) The weight of a typical pen or pencil:

2.5 mg

2.5 kg

25 mg

25 g

(d) The volume of your bathtub:

120 l

1.2 l

120 ml

1.2 kl

23. [4 pts] Convert: $58.2 \text{ dm} =$ 0.0582 hm

① .00582
② .582
④ wrong direction

