"TEST#3" ♢ Q, decimals, rates & % ♢ MATH 210 F8 ♢ ANSWERS TO THE EASIEST TEST EVER

(5) 1. *Order* the following rational numbers (least to greatest): $\frac{2}{3}$ $0.\overline{67}$ $0.6\overline{7}$

$\frac{2}{3} < .\overline{67} < .6\overline{7}$

$\frac{2}{3} = .6666666\cdots$

$.\overline{67} = .6767676\cdots$

$.6\overline{7} = .6777777\cdots$

(10) 2. Express the repeating decimal $0.\overline{27}$ as a fraction *in lowest terms*.

$100x = 27.27272727272727\cdots$

$x = .27272727272727\cdots$

$99x = 27$

$x = \frac{27}{99} = \frac{3\cdot 9}{11\cdot 9} = \frac{3}{11}$

Check:

$$11\overline{)3.00}\quad .27,\ 22,\ 80,\ 77$$

(8) 3. Cirlce T for True or F for false:

T F a. $2 + \sqrt{2}$ is irrational.

T F b. $\sqrt{5}\times\sqrt{20}$ is rational. $\sqrt{100}$

T **F** c. $1.0\overline{2}$ is irrational.

T F d. $\frac{60}{150}$ is a terminating decimal. Reduces to 2/5.

EVERY REPEATING decimal can be shown, using the process above (in #2) to be a common fraction, the ratio of two integers– i.e. RATIONAL.

(8) 4. a. Round 384.9782 to the nearest tenth.

The correct procedure:

(1) truncate the number at the TENTHS position: 384.9 This is the result if we round DOWN.

(2) Add 1 in the TENTHS position. 385.0 This is the result if we round UP.

(3) Use the midpoint to determine if 385.0 is closer (round UP) or 384.9 (round DOWN)...

384.9782 is above the middle (384.95), so 385.0 is closer, and we round UP to **385.0**

Note "385" is INCORRECT (does not show that we rounded to the tenths' place).

Using the above procedure gives the only two possibilities for rounding to the tenths' place.

b. Write $5\cdot 10^3 + 2\cdot 10^0 + 6\cdot 10^{-1} + 4\cdot 10^{-3}$ in standard decimal form.

$5\cdot 1000 + 2\cdot 1 + 6\cdot\frac{1}{10} + 4\cdot\frac{1}{1000}$

$5000 + 2 + .6 + .004$

5002.604

5000
2
.6
.004

(4) 5. Given that $524\cdot 378 = 198072$, what is $5.24\cdot 3.78$?

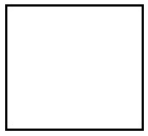
$198072 \div 10000 = 19.8072$

(5) 8. Write a statement of the multiplication fact illustrated here.

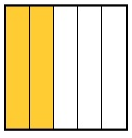
(The first two diagrams just give background.)

If this is a unit (1), then this is . . . & this represents ... $\frac{3}{4}$ of $\frac{2}{5} = \frac{6}{20}$

1

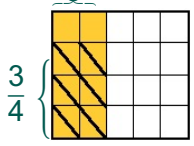


$\frac{2}{5}$



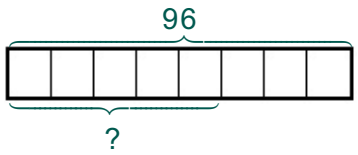
$\frac{2}{5}$

$\frac{3}{4}$



You started with $\frac{2}{5}$, then cut that into 4 equal bars, and kept 3 out of 4 (striped)....

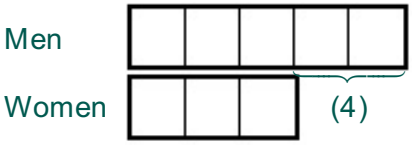
(10)9a. The ratio of girls to boys in the zebra club is 5:3; 96 children are in the club. How many are girls?



8 parts are 96 children.
1 part is 12 children.
5 parts are 60 children. (For checking, 3 parts are 36)
Check: 60+ 36= 96 total.

60 of the 96 zebra club are girls.

(10)9b. Three eighths of the students in Math 680 are women.
There are 4 more men than women. How many students are in Math 680?



2 parts → 4 students
1 part → 2 students
8 parts → 16 students

Check:
Men = 5 parts = 10
Women = 3 parts = 6
} 16

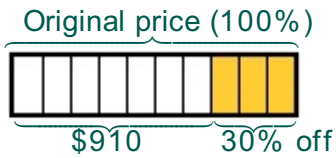
There are **16** students in the class.

(10)9c. Zack bought a house in 1995 for $140,000.
The value of the house increased 250% before he sold it in 2000. What was the value in 2000?

Value in 1995: $140,000
250% increase: 350,000 (2.50 x$140,000)
Total value in 2000: $490,000.

The value of the house was increased by $350,000—from $140,000 to **$490,000**.

(10)9d. A computer is on sale at 30% off! If the price now is $910, what was the original price?



$910 = 7 parts
$130 = 1 part
$1300 = 10 parts.

Using algebra:
Let x = the original price.
Then price with 30% off is x – .30 x

x – .30 x = $910

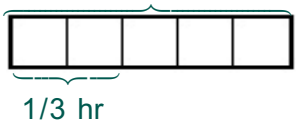
.70 x = $910

x = $1300

The original price of the computer was $1300.

(5) 9e. Gina took a third of an hour to peel 2 fifths of the apples.
At that rate, how much time will Gina spend peeling all the apples?

The whole job:



2 parts → 1/3 hr
1 part → 1/6 hr
5 parts → 5/6 hr

The whole job will take 5/6 hr to complete.
(And 5/6 hr is 50 minutes.)