

MULTIPLE CHOICE Midterm Review Hints/ Example Problems

#6) hint: keep, change, flip.

example problem: $\frac{2}{3} \div \frac{1}{2}$

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

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

answer = $\left(\frac{4}{3}\right)$

#7) Solving an equation so ISOLATE and INVERSE!

example: $8 + y = 19$

$$\begin{array}{r} -8 \quad -8 \end{array}$$

$y = 11$

#8) Solving an equation

↳ isolate and inverse

↳ inverse of a fraction is flipping the fraction.

$$\frac{4}{5}W = 20$$

$$\cdot \frac{5}{4} \quad \cdot \frac{5}{4}$$

$$\frac{5}{4} \left(\frac{4}{5}W \right) = 20 \left(\frac{5}{4} \right)$$

$$W = \frac{100}{4}$$

$W = 25$

#11) Linear equations

slope-intercept form:

$$y = 4x - 3$$

← y-intercept is -3

positive, so graph has to go "upstairs"

#13) $y = mx + b$
 \uparrow slope is the same as how much some one earns or how much money is constantly changing.
 \nwarrow starting point or spending amount if "b" is negative, it means how much someone spent.

#14 + 15) Exponents:

\hookrightarrow any number to the 1 power = itself. Ex: $4^1 = 4$

\hookrightarrow any number to the zero power = 1 Ex: $4^0 = 1$

\hookrightarrow
 $(a)^b \leftarrow$ exponent
 \uparrow
 base

the exponent tells how many times we write the base.

Example: $\left(\frac{1}{2}\right)^4 = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right)\left(\frac{1}{2}\right)\left(\frac{1}{2}\right) = \frac{1 \times 1 \times 1 \times 1}{2 \times 2 \times 2 \times 2} = \frac{1}{16}$

#16) $n = \#$ of points.

$7 = \#$ of points

$n = 7$... plug - it in !!!

#17) Scientific Notation

\hookrightarrow scientific notation looks like: 1.2×10^8

\hookrightarrow standard notation is just one number! just the ANSWER!

Example: 1,200,000

\hookrightarrow negative exponents tell you to go LEFT (move the decimal left!)

#18, #19, #20) Exponents: multiply \rightarrow add exponents
 divide \rightarrow subtract exponents
 power \rightarrow multiply

$$2^3 \cdot 2^4 = 2^{3+4} = 2^7$$

$$\frac{2^3}{2^2} = 2^{3-2} = 2^1$$

$$(2^2)^3 = 2^{2 \times 3} = 2^6$$

#21) travels 7.97×10^2 feet each second
 travels for 1.1×10^4 seconds
 how far did the plane travel? ... multiplication

#22) Square roots

196
squares
inside

\leftarrow how many
squares on
each side?

think about
this ...

2 in $\left\{ \begin{array}{l} \text{Area} = \\ 4 \text{ in}^2 \end{array} \right.$
2 in

\leftarrow how does the example
relate to the question being asked?

#23)

square root	1	2	3	4	5	6	7	8	9	10	11	12
perfect square	1	4	9	16	25	36	49	64	81	100	121	144

\downarrow
1103

#24)

? $\left\{ \begin{array}{l} 69 \text{ in}^2 \\ ? \end{array} \right.$

#25) Example: $\sqrt{3} \cdot \sqrt{12}$

$$\sqrt{3 \cdot 12}$$

$$\sqrt{36}$$

$$(6)$$

#26) square roots with the same base can be added. Ex:

$$2\sqrt{3} + 4\sqrt{3}$$

$\uparrow \quad \uparrow$
 same base
 $\sqrt{3}$

can be added!!

$$2 + 4\sqrt{3}$$

$$6\sqrt{3}$$

$$4\sqrt{5} + 2\sqrt{6}$$

$\uparrow \quad \uparrow$
 different bases
 so can not be added!

Some square roots can be broken down, that way we have the same base so we can add.

Ex: $\sqrt{7}$

can not be
broken down!

$$\sqrt{20}$$

$$\swarrow \searrow$$

$$\sqrt{4 \cdot 5}$$

we can take the 4 out of
the square root sign because
it's square root is 2!

answer: $\sqrt{4 \cdot 5}$

$$2\sqrt{5}$$

$$7 + 5\sqrt{3} + \sqrt{12}$$

\uparrow
 12 can be broken down to get a
base of $\sqrt{3}$ (like $5\sqrt{3}$).

#27) rational #: ends, repeats, can be expressed as a fraction. Ex: 0.123123123123

irrational #: DOES NOT end

DOES NOT repeat

CAN NOT be expressed as a fraction.

Ex: 0.579864378954

#29) Write a linear equation in slope-intercept form:

$$y = mx + b$$

\uparrow charge per hour
 \leftarrow initial fee.
 how much she has to spend

solve the eqn for x , the # of hours the magician stays.

#30) Think back to the love triangle!

OR

Do the reverse of the order of operations:

- ③ Exponents
- ② Multiplication/Division
- ① Addition/Subtraction

$$\frac{y-5}{4} = 7$$

Example: $\frac{x-3}{4} = 8$

- ① Is there addition/subtraction? yes, but minus three is stuck to the "x" so we can't undo that.
- ② Is there division/multiplication? yes, the 4! Inverse of division is multiplication. so multiply by 4.
- $$4\left(\frac{x-3}{4}\right) = (8)4$$

$$x-3 = 32$$

- ③ Now is there addition and subtraction? yes! the -3. Inverse of minus is addition, so add 3 to both sides.

$$\begin{array}{r} x-3 = 32 \\ +3 \quad +3 \end{array}$$

$$x = 35$$

#31) Combine like-terms is the same as combining best friends !!!

$$\triangle 9a + \square 3t - \triangle a - \square t + \textcircled{7}$$

you can do the rest...

#32) $y = \textcircled{m}x$

Solve for m! "m" and "x" are being multiplied, so how can we get "x" away from "m"?

#33) $w = 5a + 3\textcircled{g}$

perform the order of operations backwards: ④ parentheses

③ exponents

② mult/division

① Add/subtract

- 1) $5a$ is added to $3g$, so get rid of $5a$.
- 2) 3 is multiplied to " g " so undo multiplication.

#34)

$$r = \frac{\textcircled{V}}{I}$$

perform the order of operations backwards: ④ parentheses

③ exponents

② mult/division

① Add/subtract.

- 1) no addition/subtraction
- 2) yes mult/division. I is being divided, so multiply I .

$$r = \frac{\textcircled{V}}{I}$$

$$I(r) = \left(\frac{\textcircled{V}}{I}\right)I \quad \rightarrow$$

#36) $4h < 32$

↑ use this inequality sign.

① solve

② open dot or closed-dot? Arrow goes

③ is the variable less than (LEFT) or greater than (RIGHT)

#37) $2a - 10 < 2$

a) $a < -4$

b) $a < 6$

c) $a > 6$

d) $a > -4$

#38) $8a - 10 = 6a$

step 1: combine best friends

$$8a - 10 = 6a$$



step 2: get "a" by itself using ISOLATE and INVERSE

#39) $-4x + 3y = -2$

solve for y to make the eqn in $y = mx + b$

#40) The question wants you to ① graph the equation

② explain meaning of slope & y-intercept.

It's easy! we've done this before!

#41) $f(x) = -2x - 1$ is the same as $y = -2x - 1$

$f(x) = y$ so don't get confused/scared by $f(x)$
just replace $f(x)$ by y when you want!

#42) non-linear = not a straight line,

#43) How much are x and y changing? Write the table and find out!

$$42.40 - 22 = ?$$

wholesale price	\$22.00	\$42.40	\$60.60	\$102.00
retail price	\$27.50	\$53.00	\$75.75	\$127.50

$$53.00 - 27.50 =$$