# TABE 11/12 STUDY GUIDE FOR MATH LEVEL M

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# TABE Level M 11/12 Study Guide

# **READ\*ROUNDING\*PLACE VALUE**

	100	10												
place value <u>m</u> 5,791,315.26 =	<u>nillion</u> thousand 5 7	thousand <u>1</u> 9	<u>housand</u> <u>hun</u> 1	<u>dred</u> 3	tens ( 1	ones <u>an</u> 5 .	<u>d</u> 10th 2	hs 100th 6	s thousar =5milli	ndths ion, 791th	iousan	d, 3hundred	1 15 and	d 26 hundredths
246,810.8 =	2	4	6	8	1	0.	8			= 246th	ousan	d, 8hundred	10 and	d 8tenths
Rounding to the	e nearest un	it nor	umber wi	ll apj	pear	after	the i	numbe	er in th	e ones p	lace	5,791,31	1 <u>5</u> .26	246,81 <u>0</u> .8
		l his lf th	number v e number	is le	e inc ss th	crease an 5 t	ed by the n	umbe	r does	iber behi not char	nd it ige	5,791,3	re 15	246811
nearest 10 <sup>ths</sup>	no number	s will app	ear after t	he n	umb	er in t	the 1	LO <sup>ths</sup> pl	ace			5,791,315 5 791 315	. <u>2</u> 6	246,810. <u>8</u> 246,810,8
nearest 1000	no number	s will app	ear after t	he 1	000	place	5, 5,	79 <u>1</u> ,31 791,00	5.26 )0	24 <u>6</u> ,81 247,00	0.8 0	0,771,010		240.010.0
Round 5,307.35	73 to the n	earest hu	ndred				nea	rest h	undred	ths		-		
answers	5,791,315.3		246811.8			5,79	1000		24	47000		5.30	0	5307.36
MEASUREM	ENT 12	in. = 1 fo ' = 1'	ot	3 f 3'	ft. = 1	1 yd. /d.			1 me	ter = 100	) cm			
18" + 1' =ir	nches	18" -	• 1 yard = _		_incł	nes	Ę	5 m = _	CI	m	45	0cm =	m	
answers 18" + 12"	= <u>30 inches</u>	18" +	36" = <u>54 inc</u>	<u>:hes</u>			5	5 x 100 =	= <u>500cm</u>	1	45	0 ÷ 100 = <u>4.5</u>		
10' + 1 yard =	feet =	_ydsft	28" +	1 yar	-d = _	i	nche	es =	_yds_	_ftin	24	·" + 1' =	feet	:=in
answers 10'+ 3' =	<u>13 feet</u> = <u>4 yds</u>	<u>s 1 foot</u>	28"+ 3	6" = <u>6</u>	4 inc	: <u>hes</u> = '	1 <u>yds</u> 2	<u>2' 4"</u>			2'	+ 1' = <u>3 feet</u> =	<u>: 36"</u>	
FACTORS - w	/hat divides	into a nu	mber ever	nlv										
LIST multiply co	mbinations	that equa	al the num	, ber			1	12 = 1	x 12 ,	2 x 6, 3 x	(4 =	factors	1, 2, 3	3, 4, 6, 12.
What is the grea	atest comm	on factor	of 36 & 45	5?				36 = 13 45 = 1	36 218 45	<b>8</b> 3 <b>12</b> 4	4 <u>9</u> 6	6	<u>9</u>	
Which pair has	a GCF of 12	?					-	-5 - 1 -	-5	010	$\sim$			
······ p =·· ··· = •	36 and	45					3	36 = 13	86 218	<b>s</b> 31	<b>12</b> 4	<u>9</u> 66	36	and 48
	36 and	48					2	48 = 14	48 2 <b>2</b> 4	4 3 16 4	12/6	8		
Which pair has	a GCF of 3	?												
	38 and	48					3	38 = 13	3 <b>8</b> 219	<b>7</b>			<u>45</u>	<u>and 105</u>
	48 anc	105					2 1	48 = <b>1</b> 4 05 = 1	48 <b>2</b> 2 105	4(3)16 4 3)35	12 <b>6</b> 5 <b>2</b>	8 1		answers
What is the Lea	ast Commo	n Factor	of 27 and	126		Wha	atist	the GO	CF of 2	.4 and 40	D			38
What is the GC	F of 12 and	16				Wha	at is t	the GO	CF of 6	and 15				4 3
What is the GC	F of 6 and 1	8				Wha	at is t	the Le	ast Co	ommon l	Facto	or of 45 ar	1d 105	65

SIGNS TO <b>DIVIDE:</b>	<b>quotient,</b> separate, per, out of, how many in, average, divide, into, $\div$ Problems written with this sign $\div$ are written in reverse order using this frame $100 \div 5 = 5 \overline{)100}$								
	$\frac{1}{2}$ Divi	sion bar 1		<u>20</u> = 4	<u>1+9</u> =	: <u>10</u> = 2			
	-	÷		5	5	5			
		2							
	<b>V</b> 25	= a number	squared <sup>2</sup>	= 5 · 5 = 25	<b>V 25</b> = 5	<b>V 16</b> = 4	<b>√ 81</b> = 9		
SIGNS TO MULTIPLY:	prod	<b>uct</b> , combir	ie equal am	ounts , twice	e,x•*				
	of	$\frac{4}{5}$ of 30 =	$\frac{4}{5} \times \frac{30}{1} = \frac{12}{3}$	$\frac{20}{5} = 24$					
	()	<b>2(9)</b> = 18							
	3x	<b>3x</b> = 6 x	= 2	<b>5a</b> =30 x	= 6				
	<b>4</b> <sup>2</sup>	4 · 4	<b>2</b> <sup>3</sup>	2 · 2 · 2 =	10	<sup>2</sup> 10 · 10			
		16		4 · 2 = 8		100			
SIGNS TO ADD :		the sum of	, combine	e, total, mo	ore than , incre	ase , +			
SIGNS TO SUBTRACT:	comp	are, <b>differ</b>	ence, rema	ainder, decrea	ise, less than, ho	ow many less	s, how many more, -		
SIGNS TO EQUAL	<b>is</b> , a	re, was, we	ere , will be	e, the same a	<b>s</b> , yields , sold	for, <b>equiv</b> a	alent		
READING & WRIT	ING E	QUATION	S						
21 is 9 more th <b>21 = 12 + 9</b>	nan 12	8 times as <b>4 (8)</b>	s many as 4 = <b>32</b>	4 is 32 2 is	5 8 divided by 4 <b>2 = <u>8</u></b> 4	5 less th <b>29 -</b>	nan 29 is 24 - <b>5 = 24</b>		
x multiplied b <b>10x</b>	x multiplied by 10 <b>Jo receives cards for her birthday</b> . Sam receives 3 times as many Jo. Together the <b>10x</b> Jo Sam								

36 is 3 times as many as 12	6 times as many as 5 is 30	the quotient of the square root of 36 and 4 is 3
36 = 3 (12)	6 (5) =30	$\sqrt{36 \div 2} = 3$

#### ORDER OF OPERATIONS (Please Excuse My Dear Aunt Sally)

P: ( ) and division bars , E: exponents and roots , M: x and D:  $\div$  from  $\rightarrow$ , A: + and S: – from  $\rightarrow$ 

10 + (5 x 3)	5 + <u>14</u>	10 – 8 +14		18 ÷ 9 + 3 (6)	1	18 ÷ (9 +	3) ((	6)			
	7	2 + 14		2 + 18	1	18 ÷ (12)	(6)				
10 + 15 = 25	5 + 2 = 7	18		20		1.5 ( 6 )	= 9				
(17+15) x √9	14 - 4 <sup>2</sup> ÷ 2	7 + 9	- 2 (6)	(8 + 8)-2 (	4 - 1)	(3	+ 5	)(5 -	- 2) ·	- <u>24</u> 3	Ŀ
35 – 2 <sup>3</sup> ÷ 4 (6+2)	<u>(5)(1+3)+7</u> 17 – 2(4)	<u>8² - (9+9)</u> 2	8 + <u>12</u> 5-1	√81 + 6² ÷ (7 - 1)	)	46 - 4 \	9			J	
				answers 96	<b>5</b> 4 1	.0 16 19	3	23	10	15	34

# ALGEBRA SOLVE BY

<b>1.</b> SUBSTITUTIO	0N <u>18</u> + 4 x <u>18</u> + 4 9	where <b>x = 9</b> 2 + 4 = 6	<b>6x - 1</b> 3 6(5) - 30 - 13	8 where x is 5 13 3 = 17	<u>8a + 9</u> where a b <u>8(5) + 9</u> = <u>40</u> 7	is <b>5</b> and <b>b</b> is <b>7</b> + 9 = 49 ÷ 7 = 7 7			
2. INVERSE – op ADDITION IS TH 4+x=27	pposite operation IE OPPOSITE of 27-4=23	When g SUBTRACTION	iven the answer t MULT	o a problem, do the <u>inv</u> PLICATION IS OPPOS 5x=40 <b>40+5</b> =8	v <u>erse</u> operation to solv ITE of DIVISION	e			
$\frac{x}{10} = 50$	10 + 3x = 25	<b>a</b> + $\frac{14}{5}$ =	• 7	3( a + 12)= 81	5( 3a + 12)= 90				
x = 50 (10) x = 500	3x = 25 - 10 3x = 15 ÷ 3 x = 5	a + 14 = a + 14 = a =	7 (5) 35 - 14 21	3a + 36 = 81 3a = 81 <mark>- 36</mark> 3a = 45 ÷ 3 a = 15	15a + 60 = 90 15a = 90 <mark>- 60</mark> 15a = 30 ÷ 15 a = 2				
<b>3.</b> SIMPLIFYING	– sometimes a p	oroblem doesn't ha	ave a numerical s	olution					
9a – 10b + 7a <b>16a – 10b</b>	4(2x+3y) <b>8x + 12y</b>	5(2+3y) <b>10 + 15y</b>	5e + 3(2e+3y) 5e + 6e + 9y <b>11e + 9y</b>	5 <sup>2</sup> x 2 <sup>3</sup> calculator ( 5 ] ( x <sup>2</sup> ) ( 200	2 <sup>2</sup> x 3 <sup>3</sup> =	<b>= 108</b> ( enter )			
WRITE & SOLV	E 12 less	s than 36 is x	28 is	6 more than z	15 times as ma	ny as 4 is b			
n is the quotier	n is the quotient of 22 and 11 that has been decreased by 2 The product of 8 and 3 reduced by 2								
4 times as mar	ny as 3 is the sa	ame as the prod	uct of 2 and wh	at number?	$\frac{x}{10}$ = 9 – 5	3 <sup>3</sup> + 4 <sup>2</sup> = a			
The difference	in 13 squared a	and 12 squared v	was taken from	the sum of 80 and 1	20 5(a+	6)= 50			
What is the pro	oduct of 10 and	5 increased by 9	9.5 and 3.75?	b multiplie	d by 5 - √100 is 115				
Jo wants to ship a 8 oz package. The cost will be 3.50 for the first 3 oz. and x for each additional ounce. If the total cost is 8.75, what is the value of x ?									
Sam makes 10.75 an hour and gets time and a half for overtime. If he worked 8 hours plus 4 hours overtime, what would his total pay equal?									
Bailey and two candies at \$3 e	friends spent each. The rest t	\$48 at the movi hey spent on dr	es. They paid \$ inks. Find the c	8 each for tickets an ost of the drinks.	d shared a \$6 popc	orn and 2			
The quotient of	f a number and	10 is 50	The sum of 10	and the product of 3	and a number is 25	5			
The sum of a n	The sum of a number and the quotient of 14 and 5 is 7 3 times the sum of a number and 12 is 81								

GREATER THAN & LESS THAN	<ul> <li>Small end points to small nu</li> <li>greater than or equal to</li> </ul>	umber < larger end opens to large number <ul> <li>less than or equal to</li> </ul>	
0.4 > .25 .005 < 0.3	.70 < 2.5	. 21 < .5 .15 > .027	
Try - Read each number as a dollar and - Add zero behind a number to give	cents amount to help focus on t it the same amount of digits	the meaning of the decimal	
$\begin{array}{c c} X & XX & XX \\ \hline X & & \\ \hline X & & \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline X & XX & & \\ \hline X & & \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline X & XX & & \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 < .8 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \hline \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \end{array}  .6 \qquad \begin{array}{c} XX & XX & X \\ \end{array}  .6 \qquad \begin{array}{c} XX & XX & XX \\ \end{array}  .6 \qquad \begin{array}{c} XX & XX & XX \\ $	$4 \ge X$ $= \text{ to } x  0  1  2  3  4  4  4  4  4  4  4  4  4$	<b>456</b> ≤	
4 > X 4 is greater than x 0 1 2 3 4 5 6 Use a open circle for < and >	x ≥ 2 0 1 2 3 4 5 6	• $x < 1$ -1 0 1 2 3 4 5	
•     •     •     •       0 1 2 3 4 5 6     -1 0 1       x 5     x	2345     -1012345       _3     x1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	-
Fill in the blank with O or			
$x \ge 2$ $4 > x$ $x < 8$	$x \le 0$ $x > 3$ $x \ge 3$	$\geq 1_{}$ 6>X X<9 x $\leq 7_{}$	
6.2753 .207270	3.32 3.5 0.17 0.20	08 answers $(x \le 5)(x > 3)(x \ge 1)(x < 6)$ $\Rightarrow$ closed circle $\ge 2 \le 0 \ge 1 \le 7$	
0.168 0.65 0.6594		$\textbf{(6.2>)(.207<)(\ 3.32<)(\ 0.17<)(\ .168)(.6>)}$	
PATTERNS 21, 27, 33, 39 Which	is the rule for this pattern? A missing value	a. subtract 3 B. add 6 C. multiply by 2 B	

72, 60, 48, , 24	subtract 12	36	10, 20, 40, 80,,,
1, 2, 3, 5,,, 21			11, 121, 11211, 1212121, 112121211
1, 4, 9, 16, 25,,, 64	4, 81		X0, XX0, XX00.XXX00.XXX000,

answers (multiply by 2 160 320) (find the next# by+the 2 before it 8 13) (separate the 1s w/2, then put a 1 on ea. End) (square of 1-9 36 49) (put one for the front, then one on the back)

## FRACTIONS

Multiplying by a Whole Number 1. Write a fraction. Put the whole number over 1

5 x $\frac{3}{8}$	2. Multiply straight across
$\frac{5}{1} \times \frac{3}{8} = \frac{15}{8}$	3. If answer is larger on top $\div$ the bottom number into the top. The answer will be a whole
$\frac{15}{8} = 1\frac{7}{8}$	number. Remainder will be the top number of the fraction. Bottom number doesn't change.



 $\frac{7}{6} \div 3$  $\frac{7}{6} \times \frac{1}{3} = \frac{7}{18}$ 

Multiply straight across

3. If answer is a proper fraction (smaller on top), use this fraction as the answer.

#### Fractions



#### GEOMETRY





answers (135 + 45 = 180)(54 + 36 = 90)(20 + 70 = 90)(c = 25)(180)(square & rectangles)(parallelogram & rhombus - triangle has 1 right angle) (square, rectangles, parallelogram & rhombus)(45)(75)(25)(70)(85)(30)(parallelogram - 4)(rhombus - 4)(2lines)(5line segments) (2rays) (3) (4) (1)

#### AREA



A = length x width

							45 = L(15)	45÷15=L 3=L
What is	the v	vidtł	n of a parallelo	ogram that has a	an area of -	$\frac{3}{10}$ and a length of	$\frac{3}{5}$ A = length x widt	h
					<u> </u>	10	3 3	1
							$\frac{3}{10} = \frac{3}{5} x - w$	$=\frac{1}{2}$
M/bat ic	+ho l	onat	h of a roctang	la that has an a	$rap of \frac{12}{2}$	6		
vvnatis	i the i	engt	n of a rectang	ie tridt rids dri di	15 15	$\frac{10}{5}$	12 6	2
							$\frac{12}{15} = \frac{1}{5} \times - L$	$=\frac{2}{3}$
$\frac{2}{3} \times \frac{3}{3} =$	area		$\frac{1}{2} \times \frac{1}{2}$	$\frac{1}{2}$ x $\frac{2}{2}$	$\frac{7}{2} \times \frac{3}{2}$	$\frac{1}{2}$ x $\frac{3}{2}$		
3 <b>^</b> 5	area		4 <sup>^</sup> 2	3 3	8 5	2 7		
Fill in th	ne mis	ssing	amounts	$L \times W = A$		$L \times W = A$	L x W =	A
				$\frac{3}{4} \times \frac{3}{5} =$		$\frac{1}{4} \times \frac{1}{12} =$	<u> </u>	$=\frac{15}{128}$
				$\frac{2}{2}$ x = $\frac{4}{2}$		$\frac{3}{2} = \frac{21}{2}$	$\frac{3}{2}$ x	<u>3</u>
				3 ~ 9		<b> X</b> 5 40	8 ^	64
VOUU	ЛЛГ					4		
Volum	IVIC ne Th	e an	nount of space	e inside a 3 dime	ensional fig	re $1$ $2$ $V=(3)$	0(2)(1)=6 <b>OR</b> V	= Bh
volun			iouni or spuce			3 length x wi	dth x height the Area	a of the Base x height
Length	x Wi	dth :	= Area of the	base x H = Vo	lume			
LXW	= A	хН	= V					
5 7	35	3	105	What dimensi	ons could b	e used to form a ri	ght rectangular prism	with a volume of 120
28		2				Area o	f the base 24 and a he	ight of
92 35		6	30	What dimensi	ons could h	e used to form a riv	oht rectangular prism	with a volume of 70
6 4			192	what uniterist		Are	a of the base 35 and a	height of
				d to found a viab	•			

What dimensions could be used to form a right rectangular prism with a volume of 57 with a base areas of 19?

answers  $\frac{6}{15}$   $\frac{1}{8}$   $\frac{2}{9}$   $\frac{21}{40}$   $\frac{3}{14}$   $\frac{9}{20}$   $\frac{1}{48}$   $\frac{3}{8}$   $\frac{2}{3}$   $\frac{7}{8}$   $\frac{1}{8}$  16 32 18 108 15 24 8 h = 3

## **COORDINANT GEOMERTY**

Ordered pairs are numbers that show the position of a point on the coordinate plane (3, 1)



An ordered pair is written for point a by counting over (x) from the center cross to 3 and up 1 (y) (3, 1)

Point **b** is located by counting over (x) from the center cross to -2 and up (y) 2 (-2, 2)

Point **c** is located one over (x) from the center but neither up or down (y) (-1, 0)

Point **d** is located neither left or right (x) of the center but down (y) two (0, -2)

<u>**PLOT**</u> (1, 2) (-3, 1) (0, -1) (2, 3) Which two coordinates are closest to each other?



answers (1, 2) (2, 3)

#### GRAPHS

The graph shows the amount of rainfall of 4 weeks. Each X represents to total for one day.

		Х	Х		How many days during the 4 week period did it rained $\frac{1}{6}$ of a inch?
Х	Х	Х	Х		
Х	Х	Х	Х	х	How many days did it rain less than $\frac{1}{2}$ inch during this period?
Х	Х	Х	Х	Х	-
Х	Х	Х	Х	Х	What is the difference between the greatest amount of rainfall and the least amount of rainfall ?
1	1	1	1	3	
8	4	6	2	4	
					How many times did it rain at least $\frac{1}{4}$ inch but less than $\frac{3}{4}$ inch?

answers (5)(13)( $\frac{6}{8} - \frac{1}{8} = \frac{9}{8} = 1\frac{1}{8}$ )(10)

#### answers for the last page

36 – 12 = x	28 = 6 + z	15 (4) = b	n = 22 ÷ 11 –2	8 (3) – 2	4(3) = 2(?)	x= 40	a=43
24	22	60	0	22	6		
80+120 <b>– (</b> √13 <b>–</b> √	/12) 5(a	a + 6)=50	(10)(5)+9.5	5+3.75	5b - √100 = 115	5	(8-3) x + 3.50 = 8.75
200 – 25 =	5 a +	- 30=50			10 + 115	5 = <u>125</u>	5 x + 3.50 = 8.75
175		4	63	.25		5 =25	<u>8.75 - 3.50</u>
							5 = 1.05
(4 x 10.75 x 1.5)+	(10.75 x 8)	48 - (3 x 8) -	- (6+3+3) $\frac{x}{10}$ =	50 10	) +3x =25	$a + \frac{14}{5} = 7$	3(a+12)=81
150.50		12	50 x 1	0 = 500 2	5 – 10 ÷ 3 = 5	7x5-14=21	3a+36=81 so 81-36÷3=15