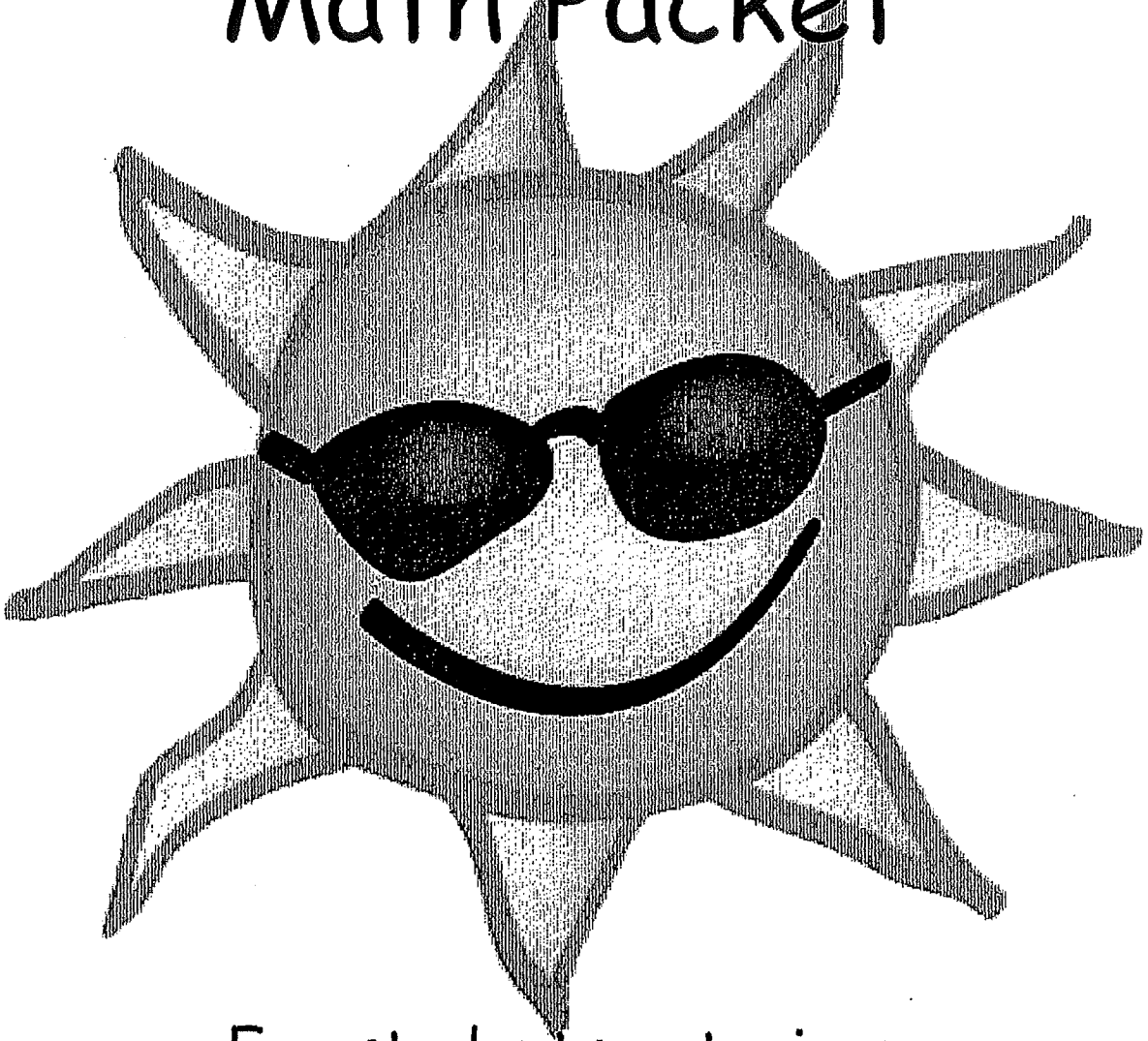
Summer

Math Packet



For students entering:

Enriched Math 7/Accelerated Math

Name: Answer Key

Dear Students and Parents,

When schools work together with families to support learning, children are inclined to succeed in school. Three decades of research have shown that parental participation in schooling does improve student learning!

Please encourage and help your child to work on this packet over the summer. Attached is a pacing guideline to help with planning. Please refer to the page numbers listed at the BOTTOM RIGHT hand side of the packet

The answer key is also located on our website. The completed packet should be given to your son/daughter's math teacher on Friday September 18th.

Dates	What am I doing?	Check if Pages are complete
June 15th- June 18th	Page 1	
June 22nd - June 25th	Page 2	
June 29th - July 2nd	Page 3-4	
July 6th - July 9th	Page 5-6	
July 13th - July 16th	Page 7	
July 20th - July 23rd	Page 8-9	
July 27th - July 30th	Page 10-11	
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August 10th - August 14th	Page 13-14	
August 17th - August 21st	Page 15	
August 24th - August 28th	Page 16	

Operation with Decimals: Simplify. Re-write each problem and show your work. Do NOT use a calculator!

1.) $5.038+2.96$

$$\begin{array}{r} 5.038 \\ +2.96 \\ \hline 7.998 \end{array}$$

2.) $16+1.6+0.517$

$$\begin{array}{r} 16 \\ 1.6 \\ +\ 0.517 \\ \hline 18.117 \end{array}$$

3.) $27-10.4$

$$\begin{array}{r} {}^{6}\not{2}\not{7}.10 \\ -\ 10.4 \\ \hline 16.6 \end{array}$$

4.) $9.006-4.44$

$$\begin{array}{r} 9.006 \\ -\ 4.44 \\ \hline 4.566 \end{array}$$

5.) $4.8 \cdot 6.9$

$$\begin{array}{r} {}^{4}\not{4}\not{7}. \\ 4.8 \\ \times\ 6.9 \\ \hline 432 \\ 2880 \\ \hline 33.12 \end{array}$$

6.) $0.05 \cdot 0.7$

$$\begin{array}{r} .05 \\ \times\ .7 \\ \hline .035 \end{array}$$

7.) $17.03 \div 9$

$$\begin{array}{r} 1.892 \\ 9\overline{)17.030} \\ -9 \\ \hline 80 \\ -72 \\ \hline 83 \\ -81 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$

8.) $4.82 \div 45$

$$\begin{array}{r} .1071 \\ 45\overline{)4.8200} \\ -45 \\ \hline 320 \\ -315 \\ \hline 50 \\ -45 \\ \hline 5 \end{array}$$

9.) $3.25 \div 0.5$

$$\begin{array}{r} 6.5 \\ 0.5\overline{)3.25} \\ -30 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

10.) $23.24 \div 2.8$

$$\begin{array}{r} 8.3 \\ 28\overline{)23.24} \\ -224 \\ \hline 84 \\ -84 \\ \hline 0 \end{array}$$

Operations with Fractions: Simplify. Write your answer in lowest terms. Do NOT use a calculator!

1.) $\frac{3}{8}+\frac{1}{4}$

$\frac{3}{8}+\frac{2}{8}=\boxed{\frac{5}{8}}$

2.) $6\frac{9}{18}+3\frac{2}{18}=\boxed{9\frac{11}{18}}$

3.) $5\frac{4}{12}-2\frac{3}{12}=\boxed{3\frac{1}{12}}$

4.) $6+3\frac{3}{8}=\boxed{9\frac{3}{8}}$

5.) $2\frac{4}{24}+2\frac{21}{24}=4\frac{25}{24}$

$=\boxed{5\frac{1}{24}}$

6.) $7\frac{1}{8}-2\frac{6}{8}$

$6\frac{9}{8}-2\frac{6}{8}=\boxed{4\frac{3}{8}}$

7.) $20-8\frac{3}{4}$

$19\frac{4}{4}-8\frac{3}{4}=\boxed{11\frac{1}{4}}$

8.) $\frac{5}{9}\div\frac{1}{3}$

$\frac{5}{3}\cdot\frac{3}{1}=\frac{5}{3}=\boxed{1\frac{2}{3}}$

9.) $\frac{11}{12}\cdot 3$

$\frac{11}{4}\cdot\frac{3}{1}=\frac{11}{4}=\boxed{2\frac{3}{4}}$

10.) $\frac{\cancel{8}\cdot\cancel{4}}{\cancel{16}\cdot\cancel{8}}=\boxed{\frac{1}{4}}$

11.) $5\frac{1}{2}\cdot 4\frac{3}{4}$

$\frac{11}{2}\cdot\frac{19}{4}=\frac{209}{8}$

$=\boxed{26\frac{1}{8}}$

12.) $3\cdot 5\frac{2}{3}$

$\frac{3}{1}\cdot\frac{17}{3}=\boxed{17}$

13.) $5\div\frac{2}{5}$

$\frac{5}{1}\cdot\frac{5}{2}=\frac{25}{2}$

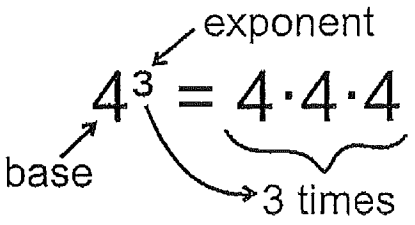
$=\boxed{12\frac{1}{2}}$

14.) $9\frac{1}{4}\div 2\frac{1}{4}$

$\frac{37}{4}\cdot\frac{4}{9}=\frac{37}{9}$

$=\boxed{4\frac{1}{9}}$

Exponents: Follow the directions for each section.



Write each exponent in *expanded form.*

Example: $5^3 = 5 \cdot 5 \cdot 5$

1.) $4^8 = 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$

2.) $(-3)^5 = (-3) \cdot (-3) \cdot (-3) \cdot (-3) \cdot (-3)$

3.) $6^6 = 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

*challenge 4.) $x^4 = x \cdot x \cdot x \cdot x$

Write each in *exponential form.*

Example: $3 \cdot 3 \cdot 3 \cdot 3 = 3^4$

5.) $7 \cdot 7 \cdot 7 = 7^3$

6.) $3 \cdot 3 \cdot 8 \cdot 8 \cdot 8 \cdot 8 = 3^2 \cdot 8^4$

*challenge 7.) $x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y = x^2 \cdot y^5$

8.) $9 \cdot 9 \cdot 9 \cdot 9 = 9^4$

Evaluate. Show your work.

Example: $2^3 = 2 \cdot 2 \cdot 2 = 8$

9.) $5^3 = 5 \cdot 5 \cdot 5$
$25 \cdot 5$
$= 125$

10.) $3^4 = 3 \cdot 3 \cdot 3 \cdot 3$
$9 \cdot 9$
$= 81$

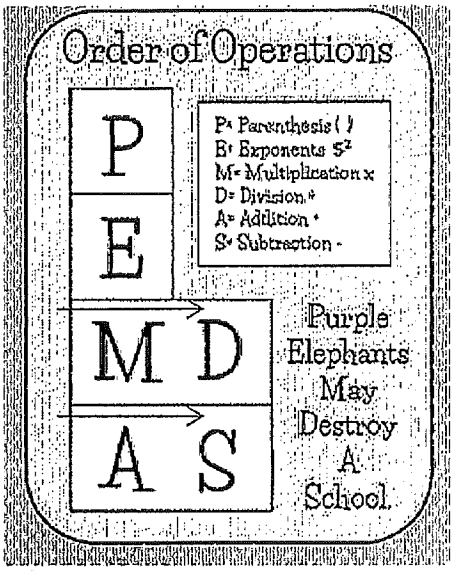
11.) $6^3 = 6 \cdot 6 \cdot 6$
$36 \cdot 6$
$= 216$

12.) $9^2 = 9 \cdot 9$
$= 81$

13.) $13^2 =$
$13 \cdot 13$
$= 169$

*challenge 14.) $4^2 \cdot 3^3 =$
$4 \cdot 4 \cdot 3 \cdot 3 \cdot 3$
$16 \cdot 27$
$= 432$

Order of Operations: Simplify. Show your work and box your answer.



Example: $13^2 - 2 \cdot 5 + (12 \div 2^2)$

$169 - 2 \cdot 5 + (12 \div 4)$

$169 - 2 \cdot 5 + 3$

$169 - 10 + 3$

$159 + 3$

$\boxed{162}$

1.) $[36 \div (3 \cdot 4)] + 2$

$3 + 2$

$\boxed{5}$

2.) $60 - 7(5 + 6 \div 2) + 2^4$

$60 - 56 + 16$

$4 + 16 = \boxed{20}$

3.) $4 + 6(5 - 2)$

$4 + 18$

$\boxed{22}$

4.) $2 + 8 \cdot 3^2$

$2 + 8 \cdot 9$

$2 + 72$

$\boxed{74}$

5.) $24 - 6 \cdot 2$

$24 - 12$

$\boxed{12}$

6.) $4 \cdot 9 + 7 \cdot 8$

$36 + 56$

$\boxed{92}$

7.) $102 - 2^4(3^4 - 51)$

$102 - 16(81 - 51)$

$102 - 16(30)$

$102 - 480 = \boxed{-378}$

8.) $14 + 8 \div 2 - 1$

$14 + 4 - 1$

$18 - 1$

$\boxed{17}$

9.) $\frac{63-8}{3+8} - 2 \Rightarrow \frac{55}{11} - 2$

$5 - 2$

$\boxed{3}$

10.) $5 \cdot \frac{19-7}{5+1} \Rightarrow 5 \cdot \frac{12}{6}$

$5 \cdot 2$

$\boxed{10}$

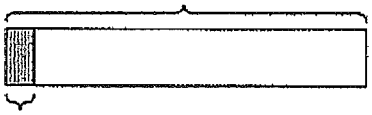
Percent of a Quantity: Solve each problem. Show your work!

Example

What is 8% of 150?

Method 1

150 (100%)



? (8%)

The model shows that:

100% → 150

1% → $\frac{150}{100} = 1.5$

8% → $8 \times 1.5 = 12$

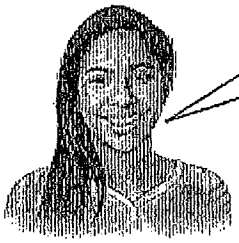
8% of 150 is 12

Method 2

8% of 150 = $\frac{8}{100} \times 150$

$= 12$

8% of 150 is 12.



"of" means "×". In this case, 8% of 150 is the same as 8% × 150.

1.) 35% of 900

Method 1

$\frac{900}{100} = 9 \times 35 = 315$

2.) 115% of $360

Method 1

$\frac{360}{100} = 3.6 \times 115 = \$414$

3.) 82% of 450

Method 2

$\frac{82}{100} \times \frac{450}{1} = 369$

4.) 170% of 2,100 ft

Method 2

$\frac{170}{100} \times \frac{2100}{1} = 3{,}570$ ft.

Choose the method you like best to complete the following problems.

5.) 35% of 125 miles

43.75 mi

6.) 46% of 340 gallons

156.4 gal

7.) 65% of 180 pounds.

117 pounds

8.) 75% of 72 hours

54 hrs.

9.) 120% of $590

$708

10.) 245% of 860 kilograms

2,107 kg

5

Percent of a Quantity - Continued: Solve each problem. Show your work!

Example

15% of a number is 180. Find the number.

15% → 180

1% → $\frac{180}{15}$

100% → $100 \times \frac{180}{15} = 1{,}200$

The number is 1,200

1.) 40% of a number is 180.

Find the number.

40% → 180

1% → $\frac{180}{40} = 4.5$

100% → $4.5 \times 100 = 450$

The number is 450

2.) 75% of a number is 230.

Find the number.

75% → 230

1% → $\frac{230}{75} = 3\frac{5}{75} = 3\frac{1}{15}$

100% → $3\frac{1}{15} \times 100 = 306\frac{2}{3}$

The number is $306\frac{2}{3}$

3.) 25% of _____ is 195.

780

4.) 56% of _____ is 70.

125

5.) 18% of _____ is 99.

550

6.) 92% of _____ is 345.

375

7.) 55% of _____ is 143.

260

8.) 350% of _____ is 679.

194

9.) 47% of _____ is 141.

300

10.) 125% of _____ is 85.

68

Percent Word Problems: Show your work! BOX your answer.

1.) Out of 30 questions, Ahmad answered 12 of them incorrectly. What percent of the questions did he answer correctly?

$30 - 12 = 18$ $\quad \frac{18}{30} = .6 \Rightarrow$ **60%**

2.) 2.85 kilograms of sugar is mixed with 3.15 kilograms of flour. What percent of this mixture is sugar?

$2.85 + 3.15 = 6.00$ $\quad \frac{2.85}{6} = .475 \Rightarrow$ **47.5%**

3.) 28% of the amount in Keith's savings is $350. How much money does Keith have in his savings?

$\frac{350}{28} \times 100 =$ **$1,250**

4.) Of the 1,640 students enrolled at a school, 50% come to school by bus, 35% come by car, and the rest of the students walk to school. How many students walk to school?

$50 + 35 = 85$ $\quad 100 - 85 = 15$ 15% walk $\quad \frac{1640}{100} = 16.4 \times 15 =$ **246 walkers**

5.) Of the 400 people at the school carnival, 95% are students and the rest are teachers. 5% teachers

a) How many students are at the school carnival?

$\frac{400}{100} = 4 \times 95 =$ **380 students**

b) If 55% of the students at the school carnival are boys, how many are girls?

45% are girls $\Rightarrow$ $\frac{380}{100} = 3.8 \times 45 =$ **171 girls**

c) How many teachers are at the school carnival?

$\frac{400}{100} = 4 \times 5 =$ **20 teachers**

d) If 35% of the teachers are male and the rest are female, how many female teachers are at the carnival?

$100 - 35 = 65$ $\quad \frac{20}{100} = .2 \times 65 =$ **13 female teachers**

Writing Algebraic Expressions:

Use the key words to write an algebraic expression. Simplify if possible.

Words and Phrases to Math Symbols

Addition

Plus
And
Total of
Altogether | Increased By
Combined | Add | Sum
Together | More Than
Added To
In All
Make

Subtraction

Subtract | Gave | Take Away
Decrease By | Fewer | Minus
Shared | Fewer Than | Less Than
Difference | Less

Multiplication

Times | Triple
Double | Product
Multiplied By
OF
Increased By a Factor
Twice | Multiple

Division

Quotient of | Per | Ratio of
Divided By | Half | Divisor
Divided Into | Percent | Split Up

Equals

Is | Are | Were | Was

Will Be | Yields | Sold For

Parenthesis Words

The Quantity of
Twice the sum of
Times the sum of
Times the difference of
Plus the difference of

Math-Aids.Com

1.) One-eighth of m.

$\frac{1}{8}m$ OR $\frac{m}{8}$

2.) Multiply x by the sum of 7 and y.

$x(7+y)$

3.) Subtract 2 from x, then add y.

$x-2+y$

4.) Add m and n, then square the result.

$(m+n)^2$

5.) Subtract the product of 5 and x from 7.

$7-5x$

6.) Divide y by the sum of 9 and x.

$\frac{y}{(9+x)}$

7.) Subtract the cube of y from 15.

$15-y^3$

8.) 4 times the sum of 10 and x.

$4(10+x)$

9.) 13 less than the quotient of 5 divided by p.

$\frac{5}{p}-13$

10.) 5 more than the product of 3 and c.

$3c+5$

11.) 12 less than 3 times a number y.

$3y-12$

12.) 6 less than the sum of 5 and y.

$(5+y)-6$

13.) one-third of the product of 5p and 3.

$\frac{5p \cdot 3}{3} = \frac{15p}{3} = 5p$

14.) product of 5x and 7 divided by 13.

$\frac{5x \cdot 7}{13} = \frac{35x}{13}$

Simplifying Algebraic Expressions: Simplify each expression by combining like terms. Box the algebraic terms and circle the numeric terms in each expression.

Example: $8 + 3j - 5 - 2j + 8j$

$8 - 5 + 3j - 2j + 8j$ Regroup like terms

$3 + j + 8j$ Add numeric terms; combine algebraic terms

$3 + 9j$

1.) $12 - 8 + 5d + 4d - 6d$

$4 + 3d$

2.) $18 + 4n - 9 + 8n - 11n$

$12n$

$9 - n$

3.) $20 + 5u + 10u - 20 - 14u$

$15u - 14u$

u

4.) $20 + 12k - 7k - 8$

12

$5k$

$5k + 12$

5.) $6x + 15 + 9x - 10x - 8$

7

$15x - 10x$

$5x + 7$

6.) $r + 9 + 10r - 5 - 4r$

4

$11r - 4r$

$7r + 4$

Solve (Write an expression and combine like terms).

7.) Kevin works $3z$ hours each day from Monday to Friday. He works $(4z - 7)$ on Saturday. Kevin does not work on Sunday. Find the number of hours Kevin works in one week in terms of z.

$3z(5) + 4z - 7 = 15z + 4z - 7 = (19z - 7)$ hrs.

8.) Kelly leaves her home and cycles $4y$ miles south, then cycles $(3y + 9)$ miles east. Finally, she cycles $(5y + 7)$ miles south and reaches her school. How far does Kelly cycle?

$4y + (3y + 9) + (5y + 7) = (12y + 16)$ miles

9.) Shanti baked $5p$ croissants. Jon baked twice as many croissants as Shanti. Ching baked 16 fewer croissants than Jon. Find the total number of croissants they baked in terms of p.

Shanti : $5p$

Jon : $2(5p)$

Ching : $2(5p) - 16$

$5p + 2(5p) + 2(5p) - 16$

$5p + 10p + 10p - 16$

$= (25p - 16)$ croissants

Expanding Algebraic Expressions: Expand each expression. Show your work!

Example: $4(5a+7)$

$= 4 \cdot 5a + 4 \cdot 7$ *Multiply each term inside the parentheses by 4.*

$= 20a + 28$

1.) $3(p+9)$ $3p+27$	2.) $7(4x+2)$ $28x+14$
3.) $10(3-2x)$ $30-20x$	4.) $9(2x-9)$ $18x-81$
5.) $6(3-4d)$ $18-24d$	6.) $2(12+5y)$ $24+10y$
7.) $4(3g+5)$ $12g+20$	8.) $8(11-6a)$ $88-48a$
9.) $7(4x+5y)$ $28x+35y$	10.) $3(8m-3n)$ $24m-9n$
11.) $3(2a+6b+3c)$ $6a+18b+9c$	12.) $5(7x+8y-3z)$ $35x+40y-15z$

Factoring Algebraic Expressions: Factor each expression by taking out the GCF. Show your work!

Example: $56x-7$

$=7\cdot 8x-7\cdot 1$ *The GCF of 56 and 7 is 7.*

$=7(8x-1)$

1.) $3-24t$ $3(1-8t)$	2.) $6a+24$ $6(a+4)$
3.) $5y+20$ $5(y+4)$	4.) $6+42h$ $6(1+7h)$
5.) $3b-21$ $3(b-7)$	6.) $3x+15y$ $3(x+5y)$
7.) $15w-5$ $5(3w-1)$	8.) $4n-28$ $4(n-7)$
9.) $8+8a$ $8(1+a)$	10.) $16g-24h$ $8(2g-3h)$
11.) $5a+20b+35c$ $5(a+4b+7c)$	12.) $15x-12y+36z$ $3(5x-4y+12z)$

One-Step Equations: Solve. Show your work! Box your answer.

1.) $x-8=15$

$X=23$

2.) $x+15=6$

$X=-9$

3.) $5x=6$

$X=\frac{6}{5}$

4.) $\frac{x}{8}=6$

$X=48$

5.) $x-8=12$

$X=20$

6.) $6+x=15$

$X=9$

7.) $1.3x=2.6$

$X=2$

8.) $\frac{x}{9}=12$

$X=108$

9.) $\frac{3}{2}\cdot\frac{2}{3}x=18\cdot\frac{3}{2}$

$X=27$

10.) $\frac{6}{5}\cdot\frac{5}{6}x=10\cdot\frac{6}{5}$

$X=12$

Name : _____ Score : _____

Identifying Ordered Pairs

A) Write the point that is located at each ordered pair.

1) (2, 5) U

2) (4, 6) R

3) (9, 3) H

4) (7, 2) T

5) (6, 6) D

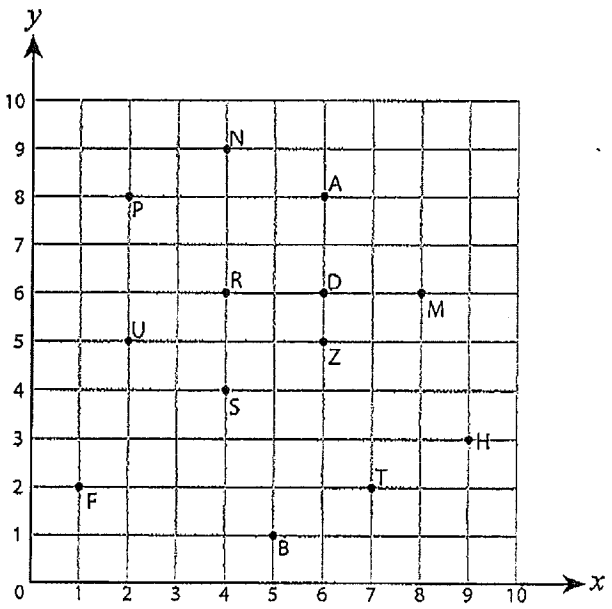
6) (8, 6) M

7) (4, 9) N

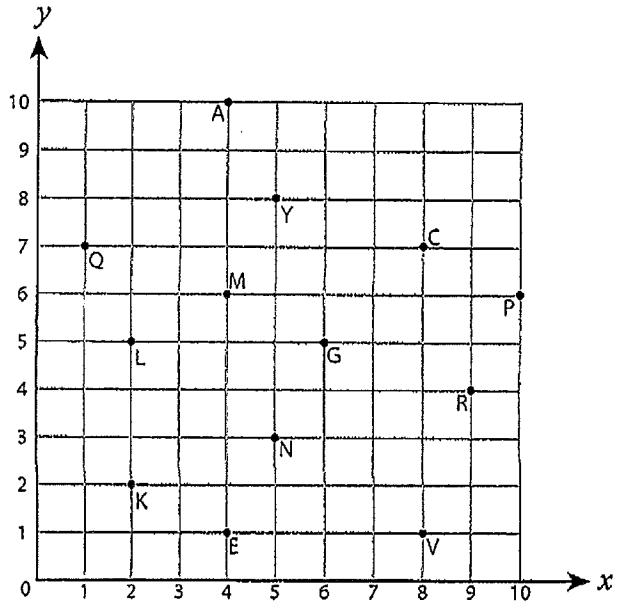
8) (4, 4) S

9) (5, 1) B

10) (1, 2) F



B) Write the ordered pair for each point.



11) G (6 , 5)

12) V (8 , 1)

13) R (9 , 4)

14) C (8 , 7)

15) E (4 , 1)

16) L (2 , 5)

17) Q (1 , 7)

18) A (4 , 10)

19) Y (5 , 8)

20) K (2 , 2)

Name : _____ Score : _____

Identifying Ordered Pairs

A) Write the point that is located at each ordered pair.

1) (1, 3) A

2) (-4, 0) U

3) (-1, 1) R

4) (4, -2) J

5) (2, -3) I

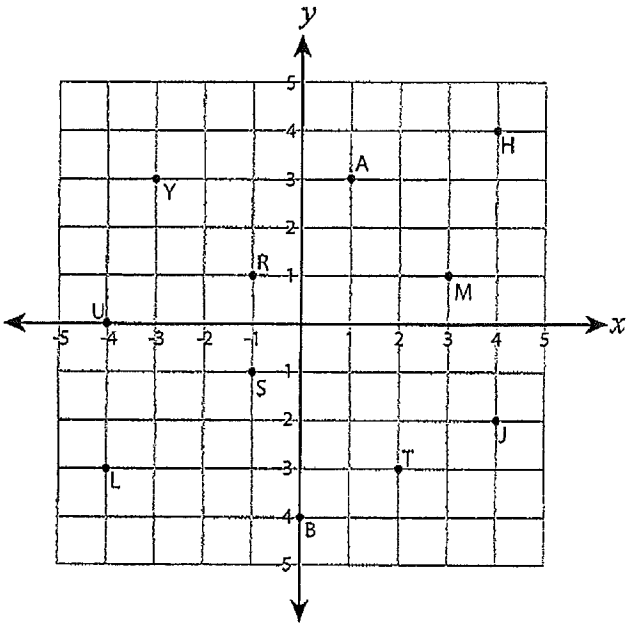
6) (3, 1) M

7) (4, 4) H

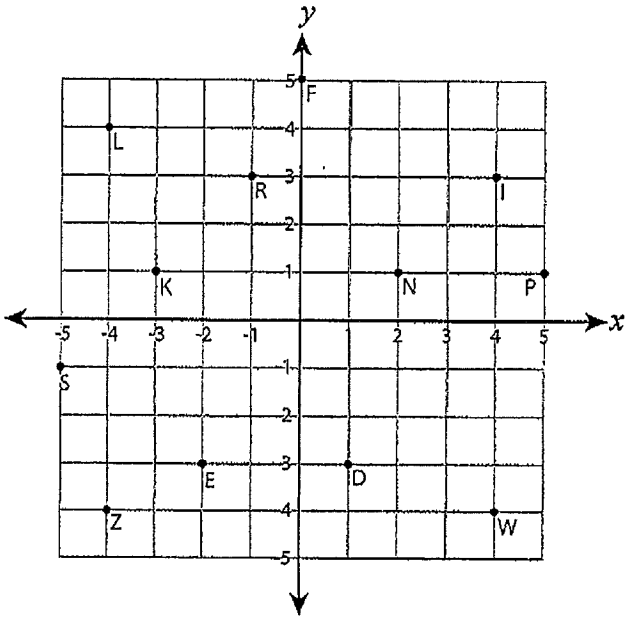
8) (0, -4) B

9) (-3, 3) Y

10) (-4, -3) L



B) Write the ordered pair for each point.



11) L(-4, 4)

12) S(-5, -1)

13) E(-2, -3)

14) K(-3, 1)

15) N(2, 1)

16) F(0, 5)

17) I(4, 3)

18) P(5, 1)

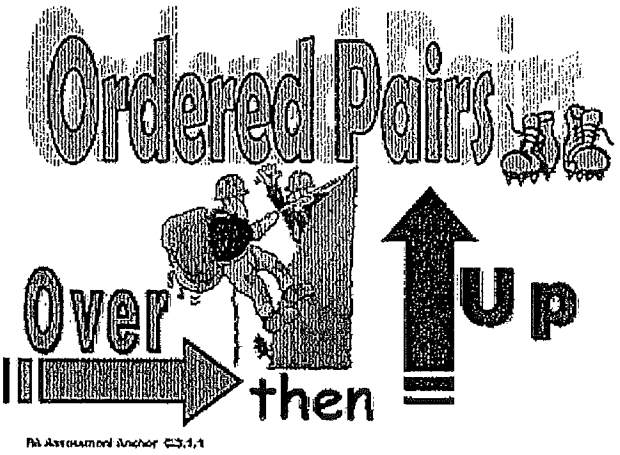
19) D(1, -3)

20) Z(-4, -4)

Plotting Points

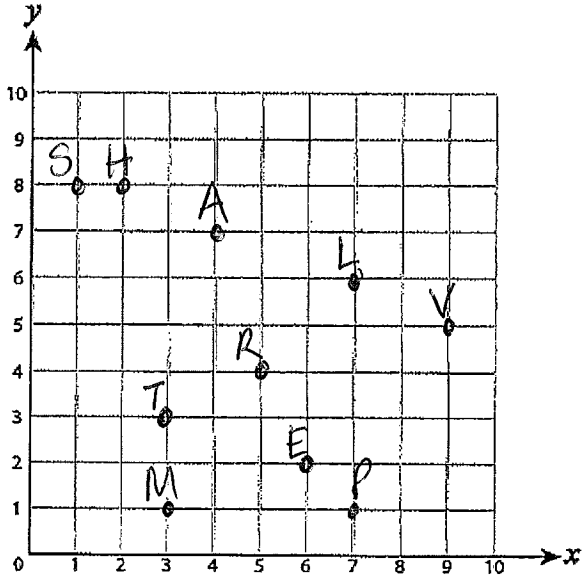
(x,y)

Ordered Pair



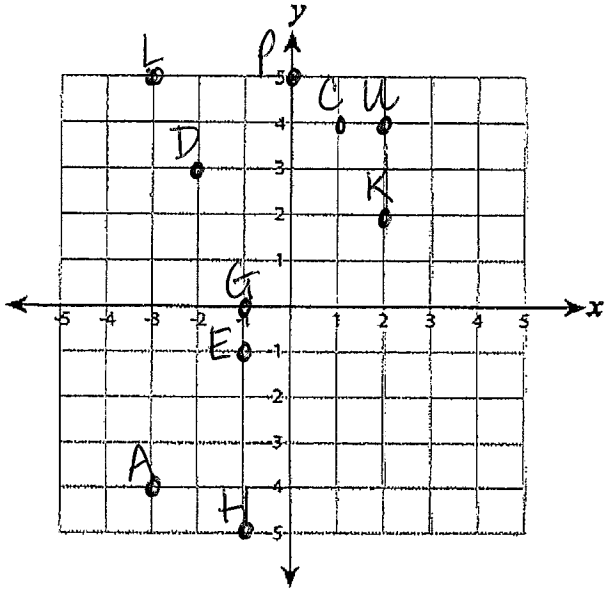
A) Plot each point on the coordinate grid.

1) T(3, 3)
2) S(1, 8)
3) H(2, 8)
4) E(6, 2)
5) R(5, 4)
6) L(7, 6)
7) M(3, 1)
8) V(9, 5)
9) P(7, 1)
10) A(4, 7)



A) Plot each point on the coordinate grid.

1) D(-2, 3)
2) H(-1, -5)
3) K(2, 2)
4) U(2, 4)
5) E(-1, -1)
6) L(-3, 5)
7) P(0, 5)
8) A(-3, -4)
9) C(1, 4)
10) G(-1, 0)



CHALLENGE

Integer Operations: Simplify. Do NOT use a calculator.

Integer rules You can use these to make flashcards to help you remember the rules

Addition

Same sign—keep and add

Different signs subtract, keep the sign of the bigger (whole) number than you'll be exact.

Subtraction

You will turn it into an addition.

Keep the first sign

Change the second sign

Change the third sign

Then you follow the addition rules.

Multiplication

(+) x (+) = +

(-) x (-) = +

(+) x (-) = -

(-) x (+) = -

Division

(+) / (+) = +

(-) / (-) = +

(+) / (-) = -

(-) / (+) = -

1.) $-7+12=$

5

2.) $\frac{45}{-3}=$

-15

3.) $9-(-17)=$

$9+(17)$

26

4.) $23+(-8)=$

15

5.) $-6(-17)=$

102

6.) $-12+(-11)=$

-23

7.) $\frac{-165}{-5}=$ 33

8.) $-8-(-14)=$

$-8+(14)$

6

9.) $18+(-5)=$

13

10.) $9\cdot(-13)=$

-117

11.) $-56\div 4=$

-14

12.) $24-(-7)=$

$24+7$

31

13.) $19+(-21)=$

-2

14.) $-16-(-9)=$

$-16+(9)$

-7

15.) $-9+8=$

-1