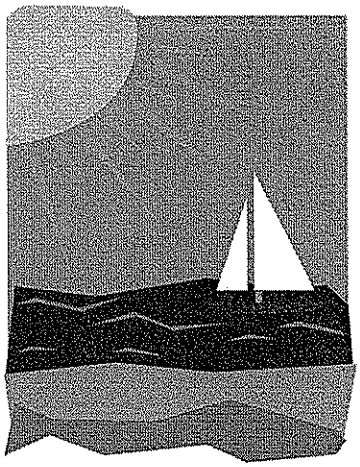
Summer 2011 Mathematics Packet
Broad Rock Middle School
Grade 5-6



Dear Parents and Students,

In this booklet you will find math activities that help to review and maintain math skills learned in fifth grade and prepare your child for sixth grade. These activities are varied and meant to show how much fun and relevant math can be in everyday life. There are activities that can be done throughout vacation.

You will find a number of activities to be completed on the following pages. All work and explanations should be completed on the front or back of the worksheet. The math packet should be returned to your child's **sixth grade math teacher**. If the packet is returned completed by **Friday 9/9** your child will receive a homework pass entitling them to a free night of homework in math. For additional practice, problem solving activities, and math games you can use the 5th grade *Everyday Math* journals.

Have a great time "sailing into summer with math!"

MUST KNOW!!!

Practice, Practice, Practice...

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Some easy and fun ways to practice your multiplication facts:

1. Take a deck of cards, shuffle them, draw 2 cards and multiply.
2. Use the above strategy and play against someone, highest product wins all the cards for that round. See how fast you can go through an entire deck of cards!
3. Have a parent/guardian/relative/older sibling quiz you as you are in the car or sitting at home.
4. Remember that multiplication is repeated addition...look for the patterns!

The Sieve of Eratosthenes

Eratosthenes (275-194 B.C., Greece) devised a 'sieve' to discover **prime** numbers. A sieve is like a strainer that you use to drain spaghetti when it is done cooking. The water drains out, leaving your spaghetti behind. Eratosthenes's sieve drains out **composite** numbers and leaves prime numbers behind.

Use the Hundreds Chart below to find all the prime numbers using the Sieve of Eratosthenes Method:

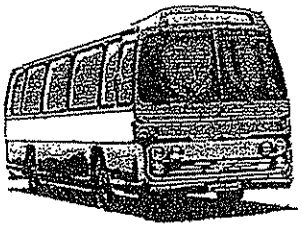
1. Cross out 1, because it is not a prime number.
2. Circle 2, because it is the smallest **positive even** prime. Now cross out every **multiple** of 2; in other words, cross out every second number.
3. Circle 3, the next prime. Then cross out all of the multiples of 3; in other words, every third number. Some, like 6, may have already been crossed out because they are multiples of 2.
4. Circle the next open number, 5. Now cross out all of the multiples of 5, or every fifth number.

Continue doing this until all the numbers through 100 have either been circled or crossed out. You have just circled all the prime numbers from 1 to 100!

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

What is the mathematical meaning to all of the **bold underlined** words in this problem?

Week 1
M6 Mathematical Skills and Tools



During the first week of summer vacation, we will focus on a South Kingstown Guild Old Mountain Field camp trip to Six Flags. A successful trip has you completing all of the following activities.

1. The fifty-six members of the camp went to Six Flags for a camp trip. Each member had fun riding 39 rides during the day. What was the total number of rides club members enjoyed?

2. Write your own camp word problem for the following problem:
   47 x 78.

3. Solve 5 of the following:

56	63	75	243	161	337
x 9	x 45	x 27	x 40	x 60	x 39

4. Have a friend quiz you on your multiplication basic facts for 15 minutes.

5. During the camp's candy bar sale, each participating member sold 87 candy bars. There were 34 members participating in the fund raising sale. How many bars were sold?

6. Jennifer wishes she could spend the entire summer at Six Flags. She figures out that she could ride 46 rides per day. She knows the park is open 7 days a week and that her summer vacation is 8 weeks long. If she could stay there all summer, how many rides would Jennifer be able to go on during the summer?

7. Write down 5 multiplication and division fact families. For example:
   $2 \times 3 = 6$ $3 \times 2 = 6$ $6 \div 3 = 2$ $6 \div 2 = 3$

Week 2
M1 Arithmetic and Numbers Concepts

Use the number 735,469. (ex. 1–6: p. 31)

1. In which place is the 5?
2. In which place is the 9?
3. In which place is the 7?
4. In which place is the 4?
5. In which place is the 6?
6. In which place is the 3?

Write > or < to order these numbers. (ex. 7–12: p. 32), (ex. 13–14: p. 38)

7. 423,335 ◯ 423,533
8. 623,486 ◯ 632,846
9. 259,487 ◯ 257,006
10. 845,662 ◯ 885,799
11. 605,492 ◯ 620,325
12. 506,495 ◯ 506,498
13. 20,561,433 ◯ 17,141,240
14. 480,627,511 ◯ 480,823,925

Write the numbers. (ex. 15–16: p. 35), (ex. 17–18: p. 44)

15. eight million, one hundred fifty thousand, twenty-one
16. two hundred million, three hundred fifty-five thousand
17. four hundred sixty-seven and two hundred thirty-thousandths
18. sixty-three and nineteen-hundredths

Write the words. (ex. 19–24: p. 35), (ex. 25–30: p. 44)

19. 3,654,862
20. 1,645,002
21. 86,491,287
22. 2,443,998
23. 304,686,291
24. 3,795,400
25. 1.16
26. 40.35
27. 8.6
28. 9.59
29. 0.861
30. 3.45

Round each number to the nearest ten, the nearest hundred, and the nearest thousand. (ex. 31–38: pp. 39, 40, 41)

31. 4179
32. 8866
33. 38,565
34. 45,213
35. 112,175
36. 243,516
37. 1,463,762
38. 5,061,279

Perplexing Patterns

We are surrounded by patterns. They abound in plants, animals, people, and man-made objects all around us. There are also many patterns in mathematics.

1. Write the next three numbers in this pattern. Can you describe the pattern? Have a try!

   3, 9, 27, 81, ____, ____, ____, . . .

2. Write the next three numbers in these patterns:

   a) 63, 56, 49, ____, ____, ____, . . .

   b) 3, 6, 12, 24, ____, ____, ____, . . .

   c) 8, 16, 24, 32, ____, ____, ____, . . .

   d) 10, 12, 15, 19, ____, ____, ____, . . .

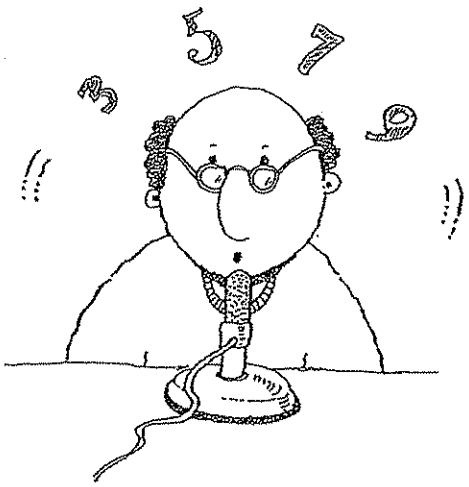
3. Try writing the next six numbers in this pattern. Then describe the pattern.

   2, 1, 4, 3, 6, 5, ____, ____, ____, ____, ____, ____, . . .

4. Write the next three letters in these patterns. See if you can describe your work!

   a) C, F, I, L, ____, ____, ____, . . .

   b) A, B, D, G, ____, ____, ____, . . .



An Appetizing Order

Catalogs offer customers all sorts of interesting products—just like these delicious items!

Fruit Pack (A healthy selection of seasonal fruits) $23.50
Candy Mix (A variety of mouth-watering chocolates and caramels) $13.70
Nuts Galore (A tasty mix of cashews, pecans, and almonds) $17.55
Cheese and Sausage (A flavorful selection of cheeses and sausages) $28.40

1. The company charges 9% shipping and handling for each item. How much will it cost to ship a box of Candy Mix? (Round to the nearest cent.) Explain your answer.

2. You have $100 to spend on gifts from the catalog. Decide on what you will order and write your choices on this form.

Belair Farms Fine Foods
P.O. Box 90210
Belair, Maryland 21014

Items	Quantity	Price Each	Subtotal
		Subtotal	
		Shipping Cost	
		Total	

3. You want to buy as many items as possible with your $100. Which item could you buy the most of? How many could you buy? Don't forget to include shipping and handling. Explain your answer.

Adding fractions

Name _____

Add It Up!

To add fractions with uncommon denominators, follow these steps.

$\frac{1}{3}$ $\frac{\ }{12}$
$+\frac{2}{4}$ $\frac{\ }{12}$

Find the least common denominator.

$\frac{1\times4}{3\times4}=\frac{4}{12}$
$+\frac{2\times3}{4\times3}=\frac{6}{12}$

Make equivalent fractions.

$\frac{4}{12}$
$+\frac{6}{12}$
$\frac{10}{12}$

Add.

$\frac{10\div2}{12\div2}=\frac{5}{6}$

Reduce to lowest terms.

Add. Reduce to lowest terms.

A.

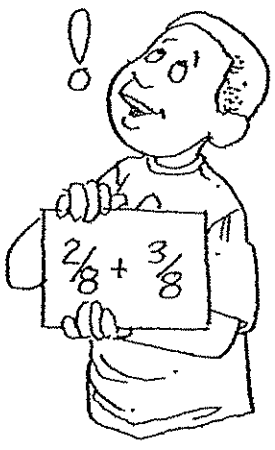
$\frac{1}{3}$	$\frac{3}{8}$	$\frac{1}{5}$	$\frac{1}{8}$
$+\frac{2}{12}$	$+\frac{2}{16}$	$+\frac{3}{10}$	$+\frac{3}{16}$
____	____	____	____

B.

$\frac{4}{10}$	$\frac{1}{6}$	$\frac{1}{4}$	$\frac{2}{5}$
$+\frac{2}{20}$	$+\frac{3}{12}$	$+\frac{6}{8}$	$+\frac{4}{15}$
____	____	____	____

C.

$\frac{2}{7}$	$\frac{1}{2}$	$\frac{1}{5}$	$\frac{1}{3}$
$+\frac{1}{3}$	$+\frac{1}{8}$	$+\frac{1}{6}$	$+\frac{1}{4}$
____	____	____	____



D.

$\frac{1}{6}$	$\frac{2}{8}$	$\frac{3}{9}$	$\frac{1}{4}$
$+\frac{1}{9}$	$+\frac{1}{3}$	$+\frac{1}{2}$	$+\frac{3}{16}$
____	____	____	____

Fraction Subtraction

To subtract fractions with unlike denominators, follow these steps.

$\frac{2}{3} = \frac{\quad}{6}$

$-\frac{2}{6} = -\frac{\quad}{6}$

Find the least common denominator.

$\frac{2\times2}{3\times2} = \frac{4}{6}$

$\frac{2\times1}{6\times1} = \frac{2}{6}$

Make equivalent fractions.

$\frac{4}{6}$

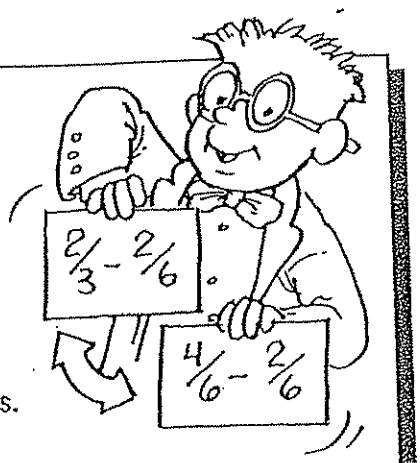
$-\frac{2}{6}$

$\frac{2}{6}$

Subtract.

$\frac{2\div2}{6\div2} = \frac{1}{3}$

Reduce to lowest terms.



Subtract. Reduce to lowest terms.

A.

$\frac{7}{8} - \frac{2}{8} =$

$\frac{1}{4} - \frac{1}{8} =$

$\frac{1}{2} - \frac{3}{12} =$

$\frac{4}{9} - \frac{1}{18} =$

B.

$\frac{7}{10} - \frac{1}{5} =$

$\frac{4}{12} - \frac{1}{6} =$

$\frac{3}{4} - \frac{3}{8} =$

$\frac{1}{2} - \frac{7}{14} =$

C.

$\frac{3}{5} - \frac{1}{5} =$

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

$\frac{1}{4} - \frac{1}{5} =$

$\frac{1}{3} - \frac{1}{7} =$

D.

$\frac{2}{3} - \frac{1}{5} =$

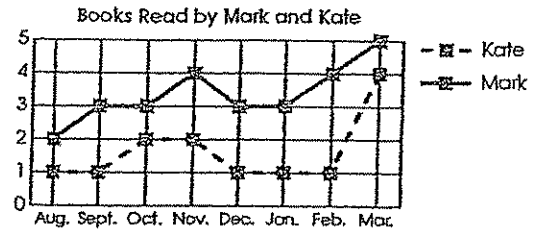
$\frac{3}{4} - \frac{2}{5} =$

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

$\frac{1}{2} - \frac{1}{9} =$

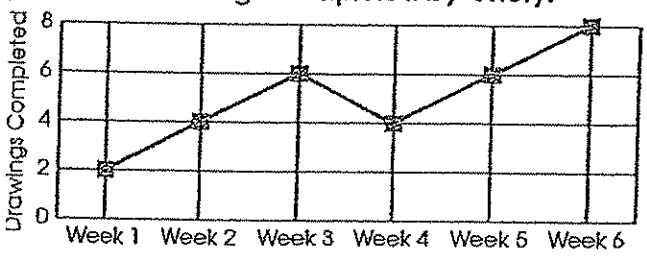
Line graphs

Ups and Downs



Line graphs are connected to show how data changes over time. Double line graphs compare two sets of data at the same time.

Use the line graphs below to answer each question.



A. How many drawings did Cheryl complete the first week? _____

B. How many more drawings did she complete the third week than the first week? _____

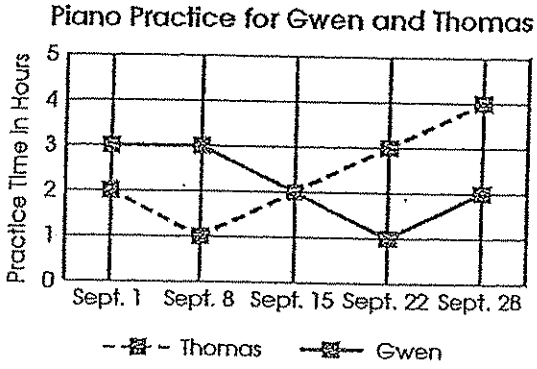
C. How many drawings did Cheryl complete in all during the six-week period? _____

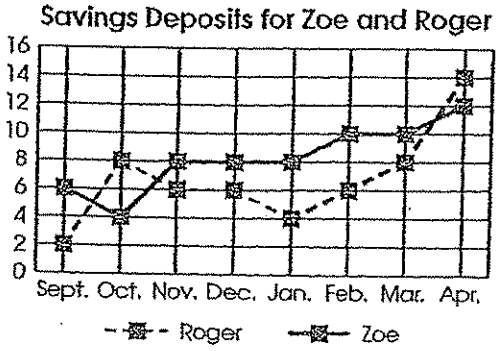
D. Did Thomas or Gwen practice the most on Sept. 1? _____

E. Did Thomas' practice time increase or decrease after Sept. 15? _____

F. How many more hours did Thomas practice on Sept. 28 than Gwen? _____

G. What day did they both practice the same number of hours? _____





H. Did Zoe's pattern of saving increase or decrease after her deposit in Oct.? _____

I. Who deposited the most in the month of January? _____

J. What direction did Roger's deposits go after January? _____

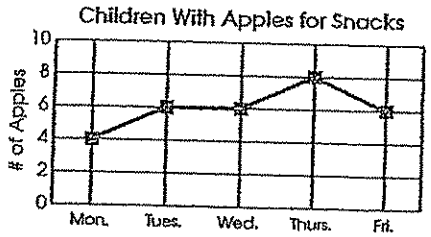
Data analysis and probability

Average It Out

To calculate the **mean**:

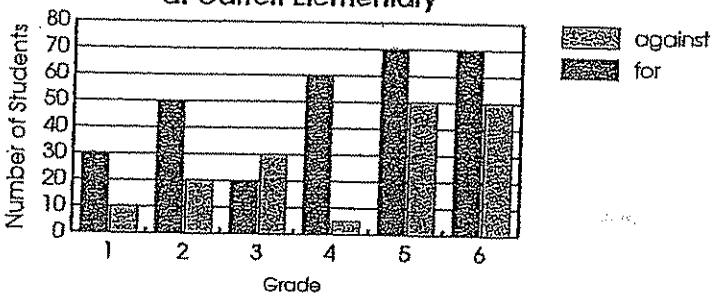
1. Collect the data from the diagram. 4, 6, 6, 8, 6
2. Add and find the sum total. $4 + 6 + 6 + 8 + 6 = 30$
3. Divide the sum total by the number of data entries (5). $30 \div 5 = 6$

The mean, 6, is the average.



Find the mean for each set of data.

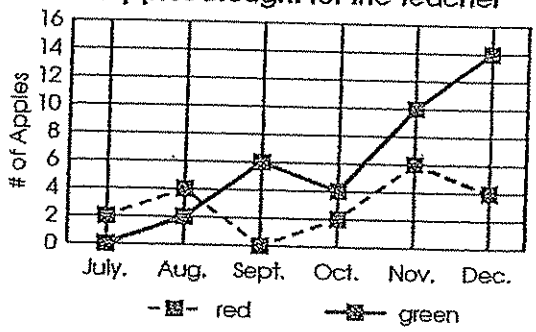
A.



for: _____ against: _____

mean mean

B.



red: _____ green: _____

mean mean

C.

Spring Food Drive Donations

# of Pounds

Stem	Leaf
0	4
1	4, 5
2	1, 1
3	0, 0
4	1, 1, 2
5	0, 1

_____ mean

D.

Kids Wearing Bicycle Helmets

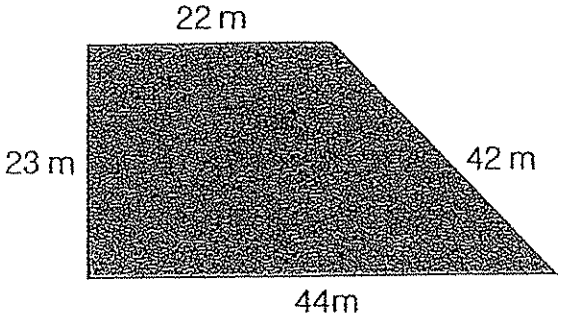
Mon.	4
Tues.	6
Wed.	3
Thurs.	1
Fri.	7

= 5 helmets

_____ mean

Perimeter

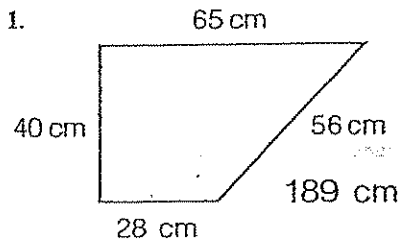
The perimeter is the distance around a shape. To find the perimeter of a shape, add the lengths of its sides. The shapes on this page are shown smaller than actual size.

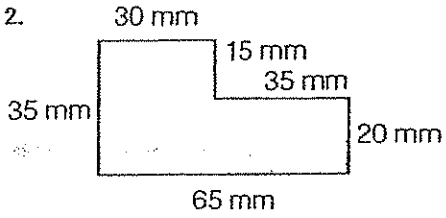


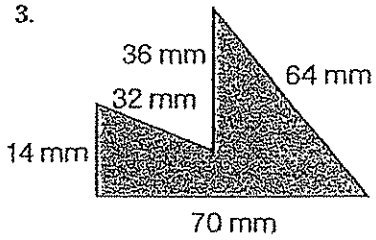
22 m
42 m
44 m
+ 23 m
131 m

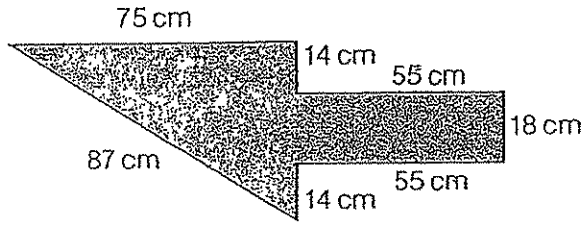
The perimeter of this shape is 131 m.

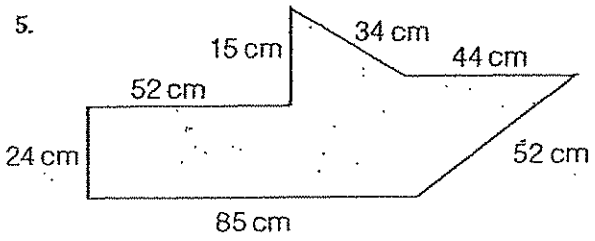
Find the perimeters.

1. 

2. 

3. 

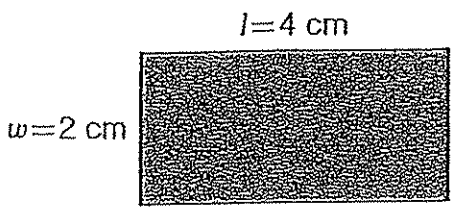
4. 

5. 

6. A triangle with sides of 5 m, 7 m, and 9 m.
7. A triangle with sides of 32 m, 27 m, and 40 m.
8. A triangle with sides of 15 cm, 25 cm, and 20 cm.
9. A quadrilateral with sides of 17 mm, 19 mm, 14 mm, and 16 mm.
10. A quadrilateral with sides of 7 cm, 8 cm, 10 cm, and 19 cm.
11. A trapezoid with sides of 6 m, 6 m, 10 m, and 15 m.

Areas of Rectangles and Squares

Use these formulas to find the areas of rectangles and squares.



Rectangle

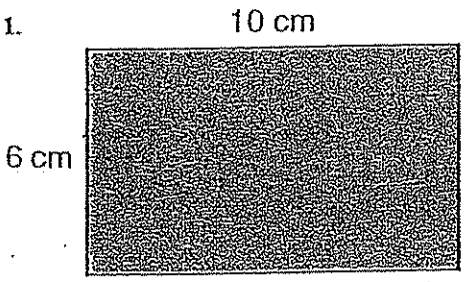
Area = length × width
$A = l \times w$
$A = 4 \times 2$
$A = 8$ cm²

Square

Area = side × side, or Area = side squared
$A = s \times s$, or $A = s^2$
$A = 2 \times 2$
$A = 4$ cm²

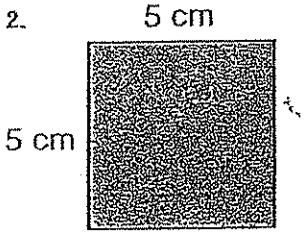
Use a formula. Find the areas. These shapes are shown smaller than actual size.

1.

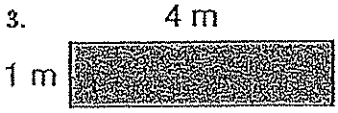


60 cm²

2.



3.



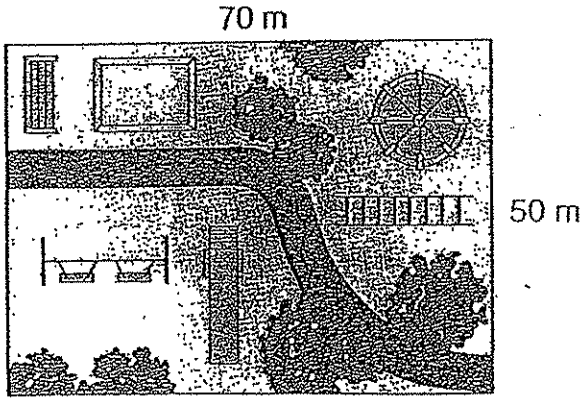
4. A square with side of 7 m.

5. A square with side of 15 cm.

Find the answers.

6a. What is the perimeter of this playground?
b. What is the area?

7a. Make a drawing to show a different playground with the same perimeter.
b. Does it have the same area?

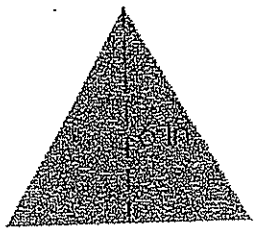


Name: _____

Area: Triangles

Finding the area of a triangle requires knowing the size of the base and the height. For the triangle formula, use **b** for **base** and **h** for **height**. Multiply $\frac{1}{2}$ times the size of the base and then multiply by the height. The answer will be in square units.

Example:



4 in.

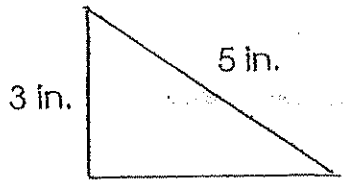
$$A = \frac{1}{2} \times b \times h$$

$$A = \frac{1}{2} \times 4 \times 6$$

$$A = 12 \text{ in.}^2$$

Directions: Apply the formula to find the area of each triangle below.

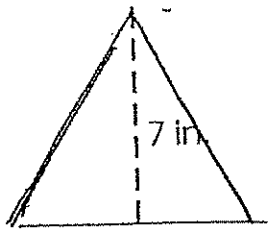
1.



4 in.

A = _____

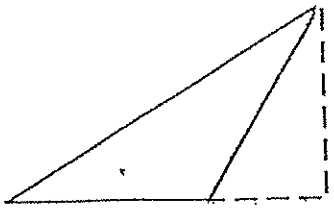
2.



5 in.

A = _____

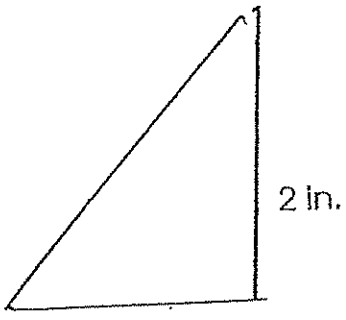
3.



3 in.

A = _____

4.



1 in.

A = _____

5. Diane wanted to make a sail for her new boat. The base of the triangular sail would be 7 feet and the height would be 6 feet. Find the area.

A = _____

Practice 28

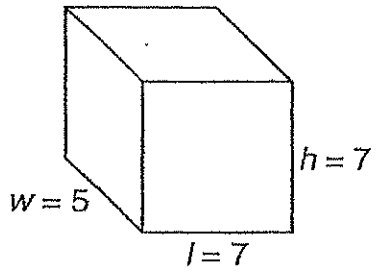
Directions: Find the volume for each rectangular solid.

Volume Formula

length x *width* x *height* = cubic units

$V = l \times w \times h$

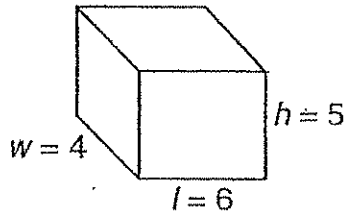
1.



_____ x _____ x _____ =

_____ cubic units

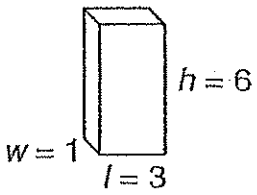
2.



_____ x _____ x _____ =

_____ cubic units

3.



_____ x _____ x _____ =

_____ cubic units

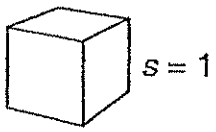
Directions: Find the volume for each cube.

Volume Formula

side x *side* x *side* = cubic units

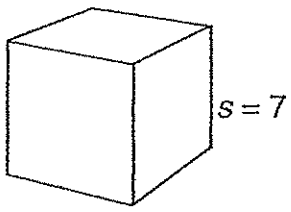
$V = s^3$

4.



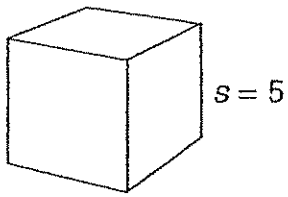
_____^{3} = _____ cubic units

5.



_____^{3} = _____ cubic units

6.

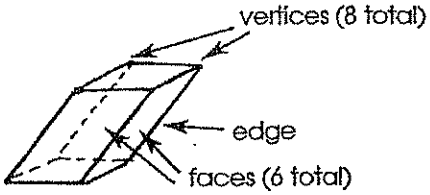


_____^{3} = _____ cubic units

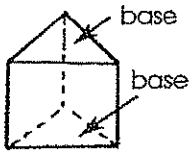
BRMS

Name _____

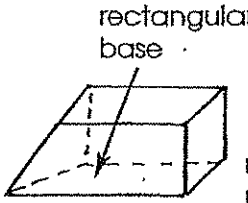
Face to Face

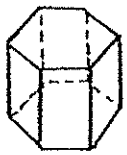


Each face of a prism connects at an edge, and each edge connects at a vertex.



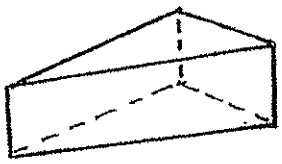
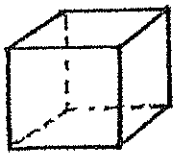
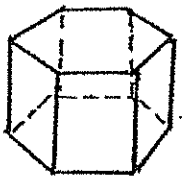
A prism has two bases that are congruent.





The name of a prism is determined by the polygons that make up its congruent bases.

Complete the chart. Write the name of each prism. Choose from these names: triangular, cube, rectangular, pentagonal, or hexagonal.

	Type of prism	Name of prism	Number of faces	Number of edges	Number of vertices
A.					
B.					
C.					
D.					
E.