MATH HELP

GRADE 7

NEW EDITION

CAPS

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Index

CHAPTER 1: COUNTING NUMBERS

READ NUMBERS

Example

136 131 628

One hundred and thirty-six million one hundred and thirty-one thousand six hundred and twenty-eight

WRITE NUMBERS

Group in groups of 3:

Million			Thousand			Units			,	decimals		
HM	TM	M	HT	TT	T	H	T	U		t	h	t

Example

Write 246 552 698 in words:

Two hundred and forty-six million, five hundred and fifty-two thousand, six hundred and ninety-eight

Example

Write 56 000 000, 708 in words:

Fifty-six million, comma seven zero eight

CHAPTER 2: EXPONENTS

EXPONENTS

5^4

The number 5 is multiplied by itself 4 times:

$5^4 = 5 \times 5 \times 5 \times 5 = 625$

Squares

$0^2 = 0 \times 0 = 0$

$1^2 = 1 \times 1 = 1$

$2^2 = 2 \times 2 = 4$

$3^2 = 3 \times 3 = 9$

$4^2 = 4 \times 4 = 16$

$5^2 = 5 \times 5 = 25$

$6^2 = 6 \times 6 = 36$

$7^2 = 7 \times 7 = 49$

$8^2 = 8 \times 8 = 64$

$9^2 = 9 \times 9 = 81$

$10^2 = 10 \times 10 = 100$

$11^2 = 11 \times 11 = 121$

$12^2 = 12 \times 12 = 144$

Cubes

$0^3 = 0 \times 0 \times 0 = 0$

$1^3 = 1 \times 1 \times 1 = 1$

$2^3 = 2 \times 2 \times 2 = 8$

$3^3 = 3 \times 3 \times 3 = 27$

$4^3 = 4 \times 4 \times 4 = 64$

$5^3 = 5 \times 5 \times 5 = 125$

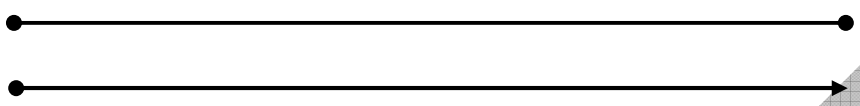
Example

Write in exponential form:

$7 \times 7 \times 7 \times 7 \times 7 = 7^5$

CHAPTER 3: GEOMETRY OF STRAIGHT LINES

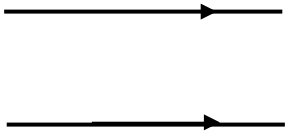
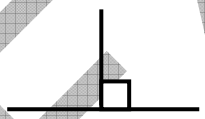
LINES



Line

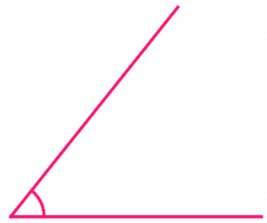
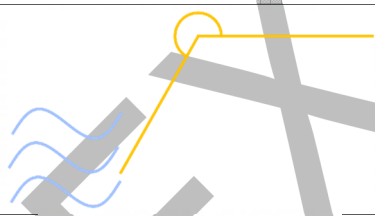
Ray

PERPENDICULAR AND PARALLEL LINES

Sketch	Name	Remember
	Parallel lines	Lines are parallel when they are the same distance from each other at any point. It's like the road. The road can't get smaller, cars will crash.
	Perpendicular lines	Perpendicular lines are like the wall and the floor with a 90° angle.

CHAPTER 4: CONSTRUCTIONS

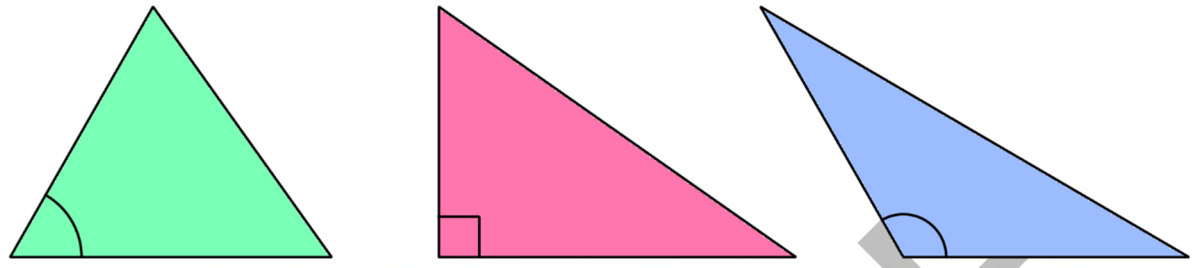
CLASSIFY ANGLES

Sketch	Name	Remember
	acute angle	it has an **acute** angle is sharp and can sting!
	obtuse angle	this angle is **obtuse** and cannot sting.
	right angle	it's a **right** angle, just like in your home.
	extended angle	like open **extended** arms.
	indented angle	jump into the **indented** pool!
	revolution	**all the way round.**

CHAPTER 5: GEOMETRY OF 2D SHAPES

TRIANGLES

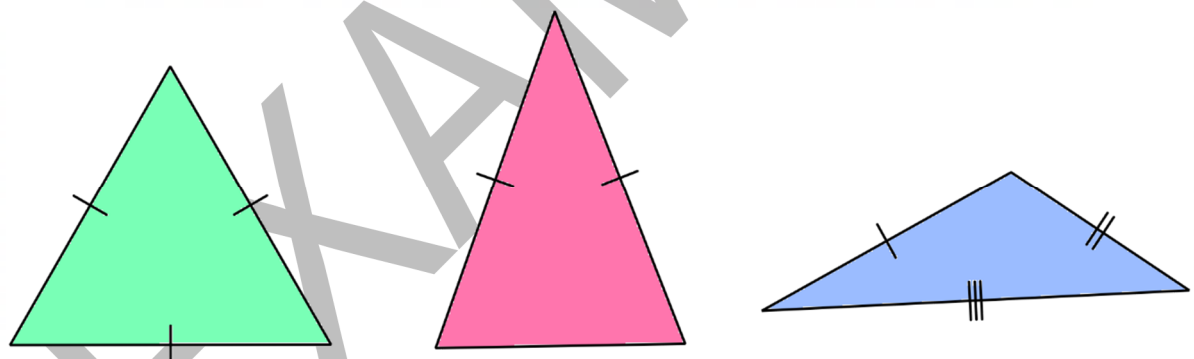
Classify according to angles



There are different types of triangles:

1. Acute angled triangle – all the angles are acute.
2. Right angled triangle – one right angle.
3. Obtuse angled triangle – one obtuse angle.

Classify according to sides



There are different types of triangles:

1. Equilateral triangle – all the sides are the same length
2. Isosceles triangle – two sides are the same length
3. Scalene triangle – all the sides are different lengths

CHAPTER 6: COMMON FRACTIONS

COMMON FRACTIONS

$\frac{4}{5}$ → numerator
fraction line
denominator

Smaller than (<) or greater than (>)

A smaller than sign has two sides. A small point (at the hippo's little ear) at one side and a large hippo's mouth on the other side. The large mouth bites the biggest number. The small ear shows to the small number.

smaller than

greater than

Example

Multiply the bottom and the top with the same number to get the bottoms the same. Now see which one is the biggest.

$\frac{1}{2}$	>	$\frac{1}{4}$
$\frac{2}{4}$	>	$\frac{1}{4}$

CHAPTER 7: DECIMAL FRACTIONS

FRACTIONS TO DECIMALS

The bottom of the fraction must change to 10, 100 or 1000. With what do you need to multiply to get 10, 100 or 1000 at the bottom. Now multiply the top with the same number. When the number is on 10 is, there must be ONE digit after the comma, on 100 there must be TWO digits after the comma and on 1 000 there must be THREE digits after the comma.

Example

$\frac{1}{2} \times \frac{5}{5} = \frac{5}{10} = 0,5$

Example

$\frac{2}{5} \times \frac{2}{2} = \frac{4}{10} = 0,4$

Example

$\frac{8}{25} \times \frac{4}{4} = \frac{32}{100} = 0,32$

Example

$\frac{9}{20} \times \frac{5}{5} = \frac{45}{100} = 0,45$

Example

$\frac{1}{125} \times \frac{8}{8} = \frac{8}{1\,000} = 0,008$

CHAPTER 8: FUNCTIONS AND RELATIONSHIPS

FLOW DIAGRAMS

To go right, follow instructions normally.

Example

Input
2 121
3 131
4 141
5 151

Rule		
+ 3		x 2

Output
4 248
6 268
8 288
10 308

To go left (back), do the opposite.

Example

Input
6 161
7 171
8 181
9 191

Rule		
+ 3 - 3		x 2 ÷ 2

Output
12 328
14 348
16 368
18 388

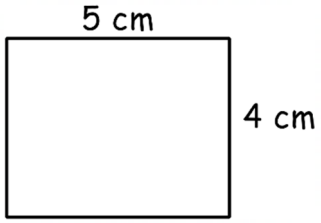
CHAPTER 9: AREA AND PERIMETER OF 2D SHAPES

PERIMETER

Perimeter is the distance around a shape. Imagine the shape is a farm. How many fences do you need to put up? You must put up a fence all the way round your farm, otherwise the sheep will run away.

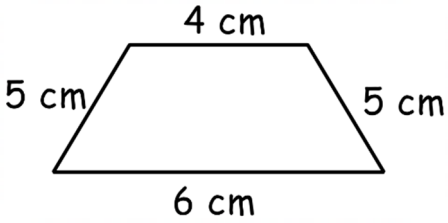
Example

Perimeter = 4 cm + 5 cm + 4 cm + 5 cm
= 18 cm



Example

Perimeter = 4 cm + 5 cm + 6 cm + 5 cm
= 20 cm

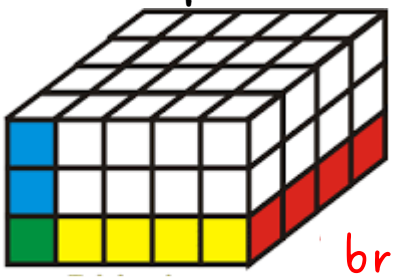


CHAPTER 10: VOLUME AND SURFACE AREA

VOLUME

Volume means how many blocks can fit into a 3D shape.

Example



height = 3 cm

breadth = 4 cm

length = 5 cm

Count or the blocks or calculate as following:

Volume = length x breadth x height

= 5 x 4 x 3

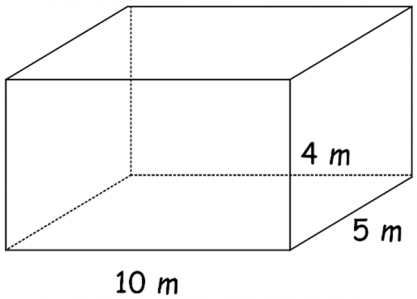
= 60 cm^3

Example

Volume = ℓ x b x h

= 10 x 5 x 4

= 200 m^3



CHAPTER 11: NUMERICAL AND GEOMETRICAL PATTERNS

COMPLETE THE PATTERN

Count forward

If you count forward it's a + or x.

To determine what we are counting in, take the 2nd number minus the 1st number. Make sure the 3rd number minus the 2nd number gives the same answer.

Example

Write the following 3 numbers in each row:

2 7 12 17

2nd – 1st = 7 – 2 = 5

3rd – 2nd = 12 – 7 = 5

It means we are counting in 5's: 2, 7, 12, 17, 22, 27, 32...

Example

Write the following 3 numbers in each row:

102 203 304 405

2nd – 1st = 203 – 102 = 101

3rd – 2nd = 304 – 203 = 101

It means we are counting in 101's: 102, 203, 304, 405, 506, 607, 708...

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