



Grade





# **Number Sense and Numeration**



e.g.





We say "5 to the power

## Squares and Square Roots

#### **Square Number**

- an integer that is the square of an integer

#### **Square Root of a Number**

- the inverse operation of the square of that number

a square number e.g.  $4 \times 4 = 16$ 

16 is the square number of 4. The square root of 16 is 4.

### • Factors and Multiples

### Finding the Greatest Common Factor (G.C.F.) of Numbers

**1**st List out the factors of each number.

e.g. 12 and 18

factors

**2nd** Circle all the common factors. The greatest one is the G.C.F.

12: (1),(2),(3), 4,(6), 12 18: (1),(2),(3),(6), 9, 18

The G.C.F. of 12 and 18: 6

### Finding the Least Common Multiple (L.C.M.) of Numbers

- **1** List out some multiples of each number.
- (2nd) Circle all the common multiples. The least one is the L.C.M.

e.g. 4 and 6

## **multiples**

4: 4, 8, (12), 16, 20, (24), 28...6: <u>6,(12), 18,(24), 3</u>0...

The L.C.M. of 4 and 6: <u>12</u>



• Integer – a whole number that can be positive, negative, or zero

Two integers are opposites if they are each the same distance away from zero.



## **Comparing Integers**

An integer is always greater than the integer on its left.

### **Addition/Subtraction of Integers**

#### **Adding Integers**

When adding a positive integer, move to the right.

e.g. 
$$+2 + (+3) = +5$$
  
<sup>3 units</sup>  
+2 +5

When adding a negative integer, move to the left.

e.g. 
$$+2 + (-3) = -1$$
  
<sup>3 units</sup>  
 $-1$  0 +2

#### **Subtracting Integers**

When subtracting a positive integer, move to the left.

e.g. 
$$+2 - (+3) = -1$$
  
<sup>3 units</sup>  
 $-1$  0 +2

When subtracting a negative integer, move to the right.

e.g. 
$$+2 - (-3) = +5$$
  
3 units  
+2 +5

• **Ratios** – dividing both terms in a ratio by their G.C.F. to write the ratio in simplest form

e.g. Write 12:30 in simplest form. -

$$12:30 = \frac{2}{2}: 5$$

The simplest form of 12:30 is 2:5.

Think : The G.C.F. of 12 and 30 is <u>6</u>.



#### **Fractions**

## Addition/Subtraction of Fractions with Different Denominators

- **15** Find the L.C.M. and equivalent fractions.
- **2nd** Add/Subtract the numerators and keep the denominator the same.

Write the answer in simplest form.



## Multiplication of a Whole Number and a Fraction

- Multiply the numerator with the whole number.
- 2nd Write the answer in simplest form.

e.g. 
$$6 \times \frac{3}{8}$$
  
=  $\frac{18}{8}$   $6 \times 3$   
=  $2\frac{1}{4}$  Write as a mixed number.

## • Decimals

# Multiplication of Decimals

Multiply the same way as whole numbers. Put the decimal point in the answer at as many decimal places as the two original decimal numbers combined.

e.g.		1.2	3	-	2 decimal places
	×	1	.7	<	1 decimal
		861			place
	1	23	0		
	2	.09	1	-	3 decimal places

## **Division of Decimals**

- Change the divisor into a whole number by moving the decimal point to the right end, and move the decimal point of the dividend the same number of places.
- 2nd Divide as "Decimals ÷ Whole Numbers".

e.g. 
$$8.6.4 \div 2.4$$
  
=  $86.4 \div 24$   
=  $\frac{3.6}{1444}$ 

## • Fractions, Decimals, and Percents

using fractions, decimals, and percents to describe parts of a whole

e.g. 
$$= \frac{3}{4} = \frac{75}{100} = 0.75 = 75\%$$

#### Finding the Percent of an Amount

1st Write the percent as a decimal.e.g. 30% of 502nd Multiply the decimal with the amount. $= 0.3 \times 50 - 30\% = 0.3$ 

## **Measurement**

• Area of a Trapezoid = the sum of the areas of 2 triangles (A and B)



or = the sum of the areas of 1 parallelogram (C) and 1 triangle (D)



Area of A =  $(12 \times 8) \div 2 = 48$ Area of B =  $(5 \times 8) \div 2 = 20$ Area of trapezoid =  $48 + 20 = \underline{68 \text{ (cm}^2)}$ 

• Surface Area of a Triangular Prism



Surface Area of a Triangular Prism =  $a \times l + b \times l + c \times l + (a \times b) \div 2 \times 2$ =  $\underline{a \times l + b \times l + c \times l + a \times b}$ 

• Volume of a Rectangular Prism



Volume of a Rectangular Prism = length × width × height

$$= l \times w \times h$$



Volume =  $15 \times 20 \times 100^*$  I m = 100 cm = <u>30 000 (cm<sup>3</sup>)</u>

\* Make sure that all measures have the same unit.



# Geometry

# **Angles Formed by Intersecting Lines**



AB // CD - parallel lines (lines that never meet)

 $\angle m$  and  $\angle n$  are corresponding angles (angles in the matching corners)

AB is parallel to CD, so  $\angle m = \angle n$ .

# **Triangles**

## Naming Triangles by Angles



acute triangle all angles are less than 90°



right triangle has an angle of 90°



obtuse triangle has an angle that is between 90° and 180°

# Naming Triangles by Sides



equilateral triangle all sides are equal



isosceles triangle two sides are equal



scalene triangle no sides are equal

# Angles in a Triangle



The sum of the angles in a triangle is always 180°.  $a + b + c = 180^{\circ}$ 

## **Rules to Prove Two Triangles are Congruent**

#### side-side-side

3 pairs of corresponding sides are equal



side-angle-side

2 pairs of corresponding sides and 1 pair of angles between the sides are equal

#### angle-side-angle



2 pairs of corresponding angles and 1 pair of sides between the angles are equal

#### angle-angle-side



2 pairs of corresponding angles and 1 pair of corresponding sides are equal

# **Coordinates**

# • The Key Elements of a Coordinate System

(x,0)

(0,y)

For the points on the *x*-axis, their *y*-coordinates are 0.

For the points on the *y*-axis, their *x*-coordinates are 0.

# **Patterning and Algebra**



- $5 \times m$  (5 times a number)
  - 10 a (a number subtracted from 10)

# • Solving Equations



# **Data Management**

- Making Circle Graphs
  - Find the size of the angle for each group.
  - Graph each group in a circle graph using a protractor.



× 360

# **Probability**

• Experimental Probability the likelihood of an event occurring, determined from experimental results

# Theoretical Probability

10

Total

a mathematical calculation of the chance that an event will happen in theory



 $\frac{b}{2}$  (a number **divided** by 2) n - 4 (4 **less than** a number) 6 - b (6 **minus** a number)



