

*South Sudan*

**PASTORALISTS LIVELIHOOD  
AND EDUCATION FIELD  
SCHOOLS**



*Mathematics*  
*for Youth learners*

*Level 3*

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**Place Value**

Identifying place value of numbers up to three digits.

Look at these numbers:

- 1)  $321 = 3 \text{ hundreds, } 2 \text{ tens, } 1 \text{ ones}$
- 2)  $901 = 9 \text{ hundreds, } 0 \text{ tens, } 1 \text{ ones}$
- 3)  $78 = 0 \text{ hundreds, } 7 \text{ tens, } 8 \text{ ones}$

**Exercise 1**

*Copy and complete the following:*

- 1)  $4 \text{ hundreds, } 0 \text{ tens, } 7 \text{ ones} =$
- 2)  $3 \text{ hundreds, } 3 \text{ tens, } 3 \text{ ones} =$
- 3)  $0 \text{ hundreds, } 9 \text{ tens, } 0 \text{ ones} =$

**Exercise 2:**

*Copy and complete the following:*

- 1)  $419 = \text{ hundreds, tens, ones}$
- 2)  $623 = \text{ hundreds, tens, ones}$
- 3)  $771 = \text{ hundreds, tens, ones}$
- 4)  $408 = \text{ hundreds, tens, ones}$

**Exercise 3:**

Write the following in words:

(a) 1,001

(b) 104

(c) 705

(d) 999

Exercise 4

1. What is the place value of digit 3 in each of the following numbers?

- (a) 78 354      (b) 26 003      (c) 35 866      (d) 53 418

2. Write the following numbers in symbols:

- (a) Sixty four thousand three hundred and seventy eight.  
(b) Forty eight thousand nine hundred and nine  
(c) Twenty five thousand and two  
(d) Eighty one thousand and ninety.

Exercise 5

1. What number comes after 999?

1000

1000 Written in words is one thousand.

1. Count the first five numbers after 1000.

Write the numbers in symbols and words:

1001.....

1002.....

1003.....

1004.....

1005.....

### Exercise 6

Arrange in place value columns and subtract

1)  $528 - 315 =$

4)  $704 - 502 =$

2)  $888 - 842 =$

5)  $638 - 315 =$

3)  $978 - 356 =$

6)  $685 - 421 =$

## NUMBERS IN ASCENDING AND DESCENDING ORDERS

### A) To arrange numbers in ascending order.

*Ascending order means from smallest to largest number*

For example put the following numbers in the correct ascending order

97, 82, 121, 76, 90, 118, 87, 69, 116

The answer will be:

69, 76, 82, 87, 90, 97, 116, 118, 121

### B) To arrange numbers in descending order

*Descending order means from largest to smallest number*

For example put the following numbers in the correct ascending order

97, 82, 121, 76, 90, 118, 87, 69, 116

The answer will be:

121, 118, 116, 97, 90, 87, 82, 76, 69

### Exercise 8

A) Write the following numbers in ascending order:

1) 21, 72, 35, 15, 58, 90, 64, 40, 28

2) 29, 92, 48, 37, 61, 76, 15, 40, 77

3) 47, 10, 34, 88, 30, 39, 60, 27, 62

B) Write the following numbers in descending order:

1) 20, 33, 78, 40, 24, 46, 10, 67, 55

2) 61, 69, 53, 21, 36, 79, 60, 24, 43

3) 13, 97, 65, 84, 43, 27, 41, 52, 90

### Exercise 9

What is the total value of the digit 4 in the numbers:

1) 621,439

2) 743,192

3) 467,815

4. 921,384

5) 354,703

### Exercise 10

Round off the following numbers to:

i) the nearest 10

ii) the nearest 100

1) 139

2) 74

3) 333

4) 19990

5) 20

6) 51

7) 601

8) 501 948

9) 222

10) 849

11) 90 008

## ADDITION

Exercise 1

$$\begin{array}{r} 1) \quad 122 \\ + 24 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 2) \quad 462 \\ + 6785 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 3) \quad 265 \\ + 187 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 4) \quad 148 \\ + 40989 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 5) \quad 75 \\ 25 \\ + 6 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 6) \quad 640 \\ 204 \\ + 14956 \\ \hline \hline \end{array}$$

$$398 + 734 + 128$$

Align the numbers vertically

$$\begin{array}{r} 398 \\ 734 \\ + 128 \\ \hline \hline \end{array}$$

In a certain Payam 925 women and 432 men voted.

How many people voted altogether?

Number of women who voted      925

Number of men who voted      + 432

Total number of people who voted 1357

1. There was a fundraising for a school in Rumbek. There were two main guests, a lady and a gentleman. The Ladies contributed **172,100** ssp while the Gentleman contributed **92,500** ssp. How much money did the two guests give?
2. Mayur is a cattle owner in a cattle camp in Wulu. In January he gave **284** cows to support the PLEFS in January. In February he gave **163** goats to buy books for PLEFS. How many cows and goats did Mayur give to support the PLEFS in the two months?
3. A payam in Minkaman has **416,250** children, **208,469** women and **120,709** men. How many people are there in the county?
4. Yirol East have started a milk processing factory. The first week it produced **54,000** packets of milk. The second week it produced **62,098** packets. How many packets of milk did the factory produce in the two weeks?

## MULTIPLICATION

### Exercise 2

617	617 to the nearest ten is 600
X 45	45 to the nearest ten is 50
-----	
-----	$600 \times 50 = \underline{30\,000}$ . This product has 5 digits.
	$\therefore$ The product of 617 and 45 will be a 5-digit number.
	i.e. 617
	617
	X 45
	-----
	3 085
	24 680
	-----
	<u>27 765</u> This Product has 5 digits.



- (i) By rounding off, find the number of digits each product will have,  
(ii) Find the accurate answer for each problem.

(a) 
$$\begin{array}{r} 53 \\ \times 17 \\ \hline \hline \end{array}$$

(b) 
$$\begin{array}{r} 72 \\ \times 11 \\ \hline \hline \end{array}$$

(c) 
$$\begin{array}{r} 22 \\ \times 44 \\ \hline \hline \end{array}$$

(d) 
$$\begin{array}{r} 322 \\ \times 7 \\ \hline \hline \end{array}$$

(e) 
$$\begin{array}{r} 78 \\ \times 3 \\ \hline \hline \end{array}$$

(f) 
$$\begin{array}{r} 49 \\ \times 23 \\ \hline \hline \end{array}$$

- Deng can draw 45 pictures per day. How many pictures can Deng draw in 45 days?
- A PLEFS class in Rumbek Center has 42 learners. If each learner planted 15 trees, how many trees were planted altogether?

## DIVISION: By multiples of 10

### Exercise 3

- (a)  $100 \div 10 =$       (b)  $120 \div 10 =$       (c)  $180 \div 10 =$       (d)  $140 \div 10 =$
- (a)  $800 \div 20 =$       (b)  $1200 \div 40 =$       (c)  $1080 \div 60 =$       (d)  $5600 \div 80 =$
- Ten boys shared 240 mangoes equally. How many did each get?
- A farmer planted 870 trees in thirty rows. How many trees did she plant in each row?
- (a)  $100 \div 10 =$       (b)  $120 \div 10 =$   
(c)  $180 \div 10 =$       (d)  $140 \div 10 =$
- Ten boys shared 240 mangoes equally. How many did each get?
- Martha planted 370 trees in ten rows. How many trees did she plant in each row?

### Divisibility tests of 6 and 9

### Exercise 4

- Which of these numbers are divisible by 2?

12, 35, 221, 97, 50, 1984, 16, 99, 33, 34.

- Which of the numbers in question 1 above are divisible by 3? 12, 99, 33
- Which of the numbers in question 1 above are divisible by 6? 12
- Which of the following numbers are divisible by 9?

54, 45, 39, 132, 333, 99, 18, 504.

- From the numbers below, choose those which cannot be completely divided by 9:

690, 180, 309, 270, 63.

- Which of these numbers are multiples of 4?

442, 268, 16, 15, 152.

## Prime numbers

- Write down the divisors for each of the following numbers:

11, 13, 15, 17, 19, 21, 31,

35, 42

- List the prime numbers between 20 and 35.
- Write down the following numbers as the sum of two prime numbers, e.g.  $5 = 2 + 3$ ;  
 $24 = 11 + 13$

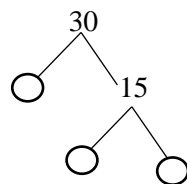
(a) 15 (b) 24 (c) 12 (d) 30 (e) 36

## Prime factors

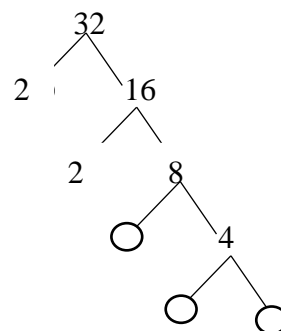
### Exercise 6

- Complete the factor trees below:

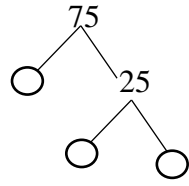
1)



2)



3)



2. Use the factor tree method to find the prime factorization of the following numbers.

(a) 24

(b) 64

(c) 84

(d) 48

(e) 79

4. Write down the prime factorization for each of these numbers:

30, 32, 75, 81, 90, 99, 100 and 153.

1. Fill in the missing factors in each of the following:

(a)  $24 = 6 \times \underline{\quad}$

(b)  $36 = 4 \times \underline{\quad}$

(c)  $54 = 9 \times \underline{\quad}$

(d)  $63 = 3 \times \underline{\quad}$

(e)  $72 = 4 \times \underline{\quad}$

2. Express the following as a product of two factors only:

- (a) 12    (b) 18    (c) 15    (d) 25    (e) 27    (f) 48    (g) 7  
(h) 21    (i) 32    (j) 64

### **GREATEST COMMON DIVISOR (G.C.D.) OR HIGHEST COMMON FACTOR (H.C.F.)**

1. Write down the divisors of the following numbers:

(a) 24    (b) 28    (c) 36

(d) 39    (e) 42    (f) 48

(g) 54    (h) 66    (i) 60

(j) 75

Write down the common divisors of:

- (a) 24 and 28    (b) 36 and 39    (c) 42 and 48    (d) 54 and 66  
(e) 60 and 75

2. Find the greatest common divisors of each of the following pairs of numbers:

- (a) 6 and 9    (b) 4 and 8    (c) 3 and 6    (d) 8 and 12    (e) 10 and 15  
(f) 18 and 12    (g) 24 and 18    (h) 18 and 21    (i) 15 and 18

#### **To find the G.C.D. using prime factorization**

Find the G.C.D of 180, 360 and 630.

- (i) Express 180, 360 and 630 as product of prime factors.

$$180 = 2 \times 2 \times 3 \times 3 \times 5$$

$$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$630 = 2 \times 3 \times 3 \times 5 \times 7$$

From the prime factorization of each number pick prime factors that occur in all prime factorizations;

Thus, 2 occurs at least once

3 occurs twice

5 occurs once

The G.C.D. of 180, 360 and 630 is  $2 \times 3 \times 3 \times 5 = \underline{90}$

1) Find the G.C.D. of the following numbers, using the prime factorization method:

(a) 54 and 90                      (b) 72 and 120                      (c) 28, 42 and 56                      (d) 45 and 60

(e) 220 and 360                      (f) 42, 70 and 112                      (g) 72, 84 and 108                      (h) 84, 140 and 224                      (i) 24 and 35

### **Multiples and least common multiples (L.C.M)**

- (a) List the multiples of 5 which are less than 50.
- (b) List the multiples of 7 which are less than 70.
- (c) List the multiples of 9 which are less than 100.
- (d) List the multiples of 11 which are less than 120.
- (e) List the multiples of 12 which are less than 140.

**B.** Common multiples of 4 and 5 which are less than 50.

Multiples of 4 are 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, ...

Multiples of 5 are 5, 10, 15, 20, 25, 30, 35, 40, 45, ...

Common multiples of 4 and 5 which are less than 50 are 20, 40,

- (a) Write down the common multiples of 2 and 3 which are less than 20.
- (b) Write down the common multiples of 4 and 8 which are less than 33.

- (c) Write down the common multiples of 7 and 9 which are less than 72.
- (d) Write down the common multiples of 4, 6 and 8 which are less than 33.
- (e) Write down the first four common multiples of 3, 4 and 6.

**C. Least common multiples (L.C.M.) by listing:**

What is the L.C.M. of 4 and 6?

Multiples of 4 are: 4, 8, 12, 16, 20, 24, 28, 32, 36 ....

Multiples of 6 are: 6, 12, 18, 24, 30, 36 .....

Common multiples of 4 and 6 are: 12, 24, 36 ...

The Least Common Multiple of 4 and 6 is 12

8. Write down the first four multiples of each of the following numbers:

- (a) 6
- (b) 13
- (c) 8
- (d) 15

**D. Least common multiples using the short method**

Find the L.C.M. of the following: (a) 4, 18 (b) 3, 10, 15

Start dividing by the smallest prime number that divides any of the numbers.

2	4, 18
2	2, 9
3	1, 9
3	3

L.C.M. of 4 and 18 is  $2 \times 2 \times 3 \times 3 = 36$   
= 36

2	3, 10, 15
3	3, 5, 15
5	1, 5, 5
	1, 1

L.C.M. of 3, 10 and 15 is  $2 \times 3 \times 5$

6. Use the method used in frame D above to find out the L.C.M. of the following:

- (a) 7, 8
- (b) 4, 10
- (c) 9, 12
- (d) 12, 15
- (e) 10, 15
- (f) 12, 30
- (g) 8, 12, 30
- (h) 6, 8, 9
- (i) 5, 6, 7

**PATTERNS**

1. What is the next number in the patterns below?

- (a) 5, 9, 13, 17, 21, 25,
- (b) 20, 18, 16, 14,
- (c) 23, 29, 31, 37,

(d) 0, 2, 4, 6, 8,

(e) 1, 2, 3, 5, 7, 11,

## **ROMAN NUMBERS**

Hindu/Arabic Numerals	1	2	3	4	5	6	7	8	9	10
Roman Numerals	I	II	III	IV	V	VI	VII	VIII	IX	X

Hindu/Arabic Numerals	20	30	40	50
Roman Numerals	XX	XXX	XL	XL

Example 1 Write 19 in Roman Numerals,  
19 is 10 and 9  
The numeral for 10 is X  
The numeral for 9 is IX  
Therefore 19 is XIX

Example 2 Write 46 in Roman Numerals.  
46 is 40 and 6,  
The numeral for 40 is XL  
The numeral for 6 is VI  
Therefore 46 is XLVI

1. Write down the following in Roman numerals:

(a) 16      (b) 29      (c) 38      (d) 47      (e) 49

2. Write the following in Hindu/Arabic numerals:

(a) XLV      (b) XIV      (c) XXXIX      (d) XXVII      (e) XIII

Find the missing numbers in the following:

1. (a)  $\frac{1}{2} = \frac{1 \times}{2 \times} = \frac{2}{2}$       (b)  $\frac{1}{2} = \frac{1 \times}{2 \times} = \frac{3}{6}$

(c)  $\frac{1}{2} = \frac{1 \times}{2 \times} = \frac{4}{8}$       (d)  $\frac{1}{2} = \frac{1 \times}{2 \times} = \frac{5}{10}$

2. (a)  $\frac{3}{4} = \frac{\quad}{8}$       (b)  $\frac{3}{3} = \frac{4}{6}$       (c)  $\frac{1}{1} = \frac{3}{9}$

(d)  $\frac{1}{6} = \frac{2}{\quad}$       (e)  $\frac{1}{2} = \frac{\quad}{4} = \frac{4}{\quad}$

**Writing in the simplest form.**

Simplify: (i)  $\frac{2}{4}$

(i)  $\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$

(ii)  $\frac{18}{27}$

(ii)  $\frac{18}{27} = \frac{18 \div 3}{27 \div 3} = \frac{6}{9}$

$\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

$\frac{18}{27} = \frac{18 \div 9}{27 \div 9} = \frac{2}{3}$

**SIMPLIFYING BY CANCELLING**

1. Use the short method to write the following fractions in their simplest form.

(a)  $\frac{6}{10}$       (b)  $\frac{9}{12}$       (c)  $\frac{14}{21}$       (d)  $\frac{15}{20}$       (e)  $\frac{18}{21}$       (f)  $\frac{15}{25}$

2. Write the following fractions in their simplest form.

(a)  $\frac{12}{48}$       (b)  $\frac{16}{28}$       (c)  $\frac{9}{36}$       (d)  $\frac{16}{24}$       (e)  $\frac{30}{40}$       (f)  $\frac{24}{32}$

3. Simply the following fractions.



- (a)  $\frac{6}{8}$       (b)  $\frac{3}{15}$       (c)  $\frac{24}{42}$       (d)  $\frac{12}{16}$       (e)  $\frac{18}{24}$       (f)  $\frac{18}{30}$       (g)  $\frac{50}{100}$       (h)  $\frac{36}{45}$

## COMPARING FUNCTIONS

**B.** Arrange in order from the smallest to largest.

$$\frac{3}{5}, \quad \frac{2}{3}, \quad \frac{1}{2}, \quad \frac{3}{4}$$

L.C.M of 5, 3, 2 and 4 is 60

$$\frac{3}{5} = \frac{36}{60} \quad \frac{2}{3} = \frac{40}{60} \quad \frac{1}{2} = \frac{30}{60} \quad \frac{3}{4} = \frac{45}{60}$$

$$\frac{30}{60} \quad \frac{36}{60} \quad \frac{40}{60} \quad \frac{45}{60}$$

$$\text{(i.e.) } \frac{1}{2}, \quad \frac{3}{5}, \quad \frac{2}{3}, \quad \frac{3}{4}$$

1. Arrange in order from the smallest to largest.

(a)  $\frac{1}{5}, \quad \frac{1}{3}, \quad \frac{1}{2}, \quad \frac{1}{4}$

(b)  $\frac{1}{2}, \quad \frac{2}{3}, \quad \frac{3}{8}$

**Example 1:**

$$\begin{aligned} 3\frac{3}{8} + 1\frac{1}{4} &= (3 + 1) + \left(\frac{3}{8} + \frac{1}{4}\right) \\ &= 4 + \frac{3+2}{8} \\ &= 4 + \frac{5}{8} \\ &= 4\frac{5}{8} \end{aligned}$$

**Example 2:**

$$\begin{aligned} 1\frac{4}{5} + 2\frac{1}{2} &= (1 + 2) + \left(\frac{4}{5} + \frac{1}{2}\right) \\ &= 3 + \frac{8+5}{10} \\ &= 3 + \frac{13}{10} \\ &= 3 + 1\frac{3}{10} \\ &= 4\frac{3}{10} \end{aligned}$$

Add the following and give your answers in the simplest form.

(a)  $1\frac{1}{8} + 2\frac{5}{8} =$

(b)  $8\frac{1}{2} + 1\frac{1}{4} =$

(c)  $2\frac{1}{3} + 1\frac{1}{6} =$

(d)  $9\frac{1}{5} + 2\frac{1}{2} =$

(e)  $6\frac{1}{3} + 1\frac{1}{4} =$

(f)  $3\frac{1}{6} + 7\frac{1}{3} =$

**Example 1:**

$$\begin{aligned}
2\frac{5}{6} - 1\frac{2}{3} &= (2 - 1) + \left(\frac{5}{6} - \frac{2}{3}\right) \\
&= 1 + \frac{5 - 4}{6} \\
&= 1 + \frac{1}{6} \\
&= 1\frac{1}{6}
\end{aligned}$$

**Example 2:**

$$\begin{aligned}
5\frac{1}{3} - 1\frac{1}{2} &= (5 - 1) + \left(\frac{1}{3} - \frac{1}{2}\right) \\
&= 4 + \frac{(2 - 3)}{6} \\
&= 4 + \frac{(2 - 3)}{6} \\
&\text{(Take 1 from 4 and add it to } \frac{2}{6} \text{)} \\
&= 3 + 1\frac{2}{6} - \frac{3}{6} \\
&= 3 + \frac{(8 - 3)}{6} \\
&= 3 + \frac{5}{6} \\
&= 3\frac{5}{6}
\end{aligned}$$

**Work out:**

(1)  $8\frac{7}{9} - 2\frac{4}{9} =$

(2)  $3\frac{1}{2} - 2\frac{5}{12} =$

(3)  $9\frac{7}{10} - 4\frac{2}{5} =$

(4)  $6\frac{3}{5} - 4\frac{1}{5} =$

(5)  $2\frac{7}{8} - 1\frac{3}{8} =$

(6)  $7\frac{2}{3} - 7\frac{1}{4} =$

(7)  $4\frac{1}{6} - 1\frac{6}{9} =$

(8)  $1\frac{3}{8} - \frac{5}{6} =$

(9)  $8\frac{1}{9} - 1\frac{1}{12} =$

Copy and complete the following tables:

(a) Add

+	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{4}$
$\frac{1}{2}$				
$\frac{1}{3}$				
$\frac{1}{4}$			$\frac{11}{12}$	
$\frac{1}{6}$				

(b) Subtract

—	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$
$\frac{1}{2}$			
$\frac{2}{3}$			
$\frac{5}{8}$		$\frac{7}{24}$	

2. (a)  $1\frac{3}{5} + \frac{4}{5} =$

(b)  $1\frac{1}{6} - \frac{5}{7} =$

(c)  $4\frac{7}{11} + 9\frac{1}{2} =$

3. (a)  $3\frac{1}{8} - 1\frac{5}{8} =$

(b)  $10\frac{1}{2} + \frac{1}{18} =$

(c)  $1\frac{3}{10} - \frac{7}{10} =$

**Multiply:**

(i)  $2\frac{1}{3} \times 4$

$$2\frac{1}{3} \times 4 = \frac{7}{3} \times 4$$

$$= \frac{28}{3}$$

$$= 9\frac{1}{3}$$

(ii)  $6 \times 1\frac{3}{4}$

$$6 \times 1\frac{3}{4} = 6 \times \frac{7}{4}$$

$$= \overset{3}{\cancel{6}} \times \frac{\overset{7}{\cancel{4}}}{2}$$

Work out the following, giving your answers in the simplest form:

1.  $3 \times 2\frac{1}{2} =$

2.  $2\frac{3}{5} \times 2 =$

3.  $5 \times 1\frac{1}{3} =$

4.  $2\frac{2}{9} \times 4 =$

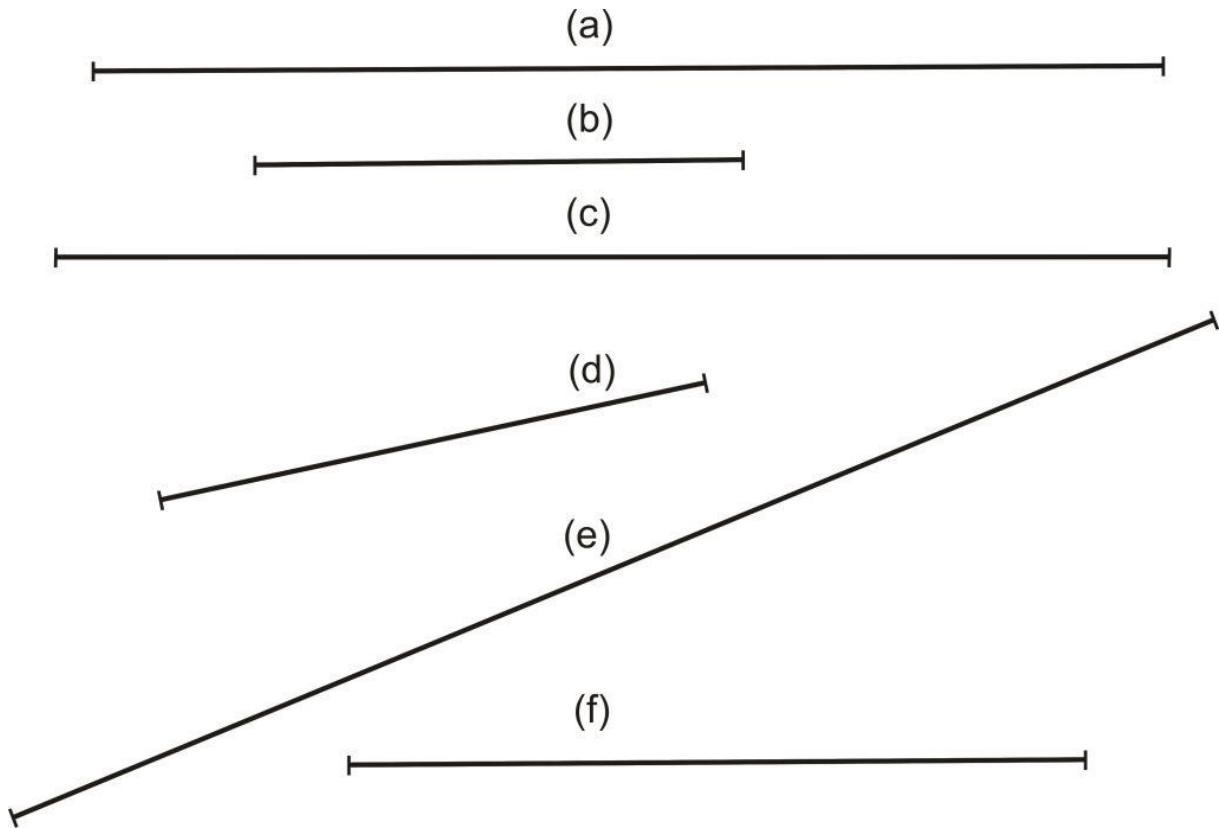
5.  $2\frac{1}{10} \times 5 =$

6.  $2 \times 1\frac{5}{6} =$

7.  $5 \times 2\frac{1}{7} =$

8.  $3\frac{4}{5} \times 4 =$

1. Measure the length of the following lines to the nearest centimetre:



2. Martha measured the length of a pencil using a ruler. One end of the pencil was on the 1 cm mark of the ruler and the other end on the 16 cm mark of the ruler. What was the length of the pencil?

3. Estimate and then measure the lengths of the following objects and give answers to the nearest metre or centimetre:

- (a) The distance from your home in the cattle camp to the PLEFS?
- (b) Your height?
- (c) The PLEFS kitchen garden?
- (d) Your PLEFS learning space?

**Example 1:** Change 475 cm into metres.

100 cm = 1 metre

$$\begin{array}{r}
 4 \\
 100 \overline{) 475} \\
 \underline{-400} \\
 75
 \end{array}$$

$$= 4 \frac{75}{100}$$

$$= 4.75 \text{ m or } 4 \frac{3}{4} \text{ m}$$

**Example 2:** Change 5 metres into centimetres,

$$5\text{m} = (5 \times 100)\text{cm}$$

$$= 500 \text{ cm}$$

1. Change these measurements into metres:

(a) 245 cm =

(b) 425 cm =

(c) 535 cm =

(d) 140 cm =

(e) 780 cm =

(f) 340 cm =

(g) 2,565 cm =

(h) 5,010 cm =

2. Change these measurements into centimetres:

(a) 8m =

(b) 13m =

(c) 24m =

(d) 207m =

(e) 21 m =

(f) 100m =

(g) 105m =

(h)  $\frac{1}{2} \text{ m}$

3. Change the following into Kilometres:

(a) 12,000 m

(b) 30,000 m

(c) 4,000 m

(d) 18,000 m

**Example 1:** Add 3 km 450 m to 1 km 700 m.

$$450\text{m} + 700\text{m} = 1\,150\text{m}$$

Km	M
3	450
+1	700
5	150

$$1\,000 \text{ metres} = 1 \text{ kilometre}$$

$$1\,150 \text{ metres} = 1 \text{ kilometre and } 150 \text{ m}$$

Record 150 metres and carry over 1 kilometre.

Add the 1 kilometre to 3 km + 1 km,

$$\text{i.e. } 3 + 1 + 1 = 5 \text{ km}$$

**Example 2:** Subtract 2 km 350 m from 4 km 240 m

Km	M
4	240
- 2	350
<u>1</u>	<u>890</u>

350 m is too big to be subtracted from 240 m. So borrow 1 km leaving 3 km. Convert the 1 km borrowed to metres and add 240 m to get 1 240 m.

Then subtract 350 m.

$$\begin{array}{r} 1\ 240 \\ - 350 \\ \hline 890 \end{array}$$

Subtract 2 km from 3 km to get 1 km.

(a)

**Example 1:** Multiply 3 km 275 m by 4

Km	M
3	275
x	4
<u>13 km</u>	<u>100 m</u>

(i)  $275 \times 4 = 1\ 100\text{m}$

But 1 000 m = 1 km

Therefore 1 100 = 1 km and 100 m

(ii) Record 100 metres and carry over 1 km

(Hi)  $3\text{km} \times 4\text{ km} = 12\text{ km}$

(iv) Add the 1 km carried over to make 13 km.

**Example 2:**

Km	M	Cm
1	37	18
x		6
<u>6</u>	<u>223</u>	<u>8</u>

(i)  $18 \times 6 = 108\text{cm}$

but 100 cm = 1 m

therefore 108 cm = 1 m and 8 cm.

Record 8 cm and carry over 1 m.

(ii)  $37 \text{ m} \times 6 = 222 \text{ m}$

add the carried over 1 m to make 223 m

223 is less than a 1 000.

Record 223 in the m column,

(iii)  $1\text{ km} \times 6 = 6\text{ km}$

Record 6 in the km column.

$$\begin{array}{r}
 1) \quad \text{M} \quad \text{CM} \\
 \quad \quad 7 \quad 25 \\
 \quad \quad \text{X} \quad 5 \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 2) \quad \text{KM} \quad \text{M} \quad \text{CM} \\
 \quad \quad 12 \quad 27 \quad 38 \\
 \quad \quad \text{X} \quad \quad \quad 5 \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 3) \quad \text{M} \quad \text{CM} \\
 \quad \quad 2 \quad 20 \\
 \quad \quad \text{X} \quad 8 \\
 \hline
 \hline
 \end{array}$$

1. (a)  $24\text{km } 12\text{cm} \div 9$

(b)  $15\text{m } 20\text{cm} \div 4$

(c)  $46\text{km } 30\text{cm} \div 5$

(d)  $38 \text{ m } 34 \text{ cm} \div 6$

2. (a)  $3 \text{ km } 500 \text{ m} \times 3$

(b)  $13 \text{ km } 500 \text{ m} \div 3$

(c)  $2 \text{ km } 150 \text{ m } 63 \text{ cm} \times 9$

(d)  $9 \text{ km } 300 \text{ m} \div 4$

(e)  $12\text{km } 725 \text{ m} \times 2$

(f)  $12\text{km } 950\text{m} \div 7$

(g)  $6 \text{ km } 900 \text{ m} \times 7$

(h)  $23\text{km } 750\text{m} \div 5$

(i)  $34\text{km } 75 \text{ m} \times 12$

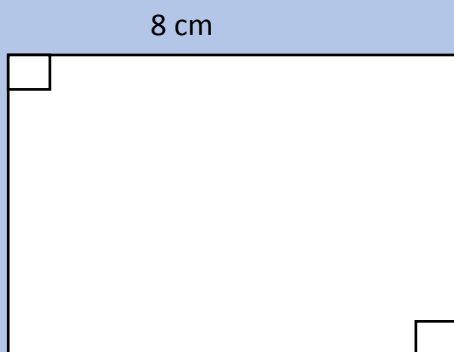
(j)  $59 \text{ km } 600 \text{ m} \div 8$

(k)  $6 \text{ km } 50 \text{ m} \times 10$

(l)  $9\text{km } 90\text{m } 45 \text{ cm} \times 100$

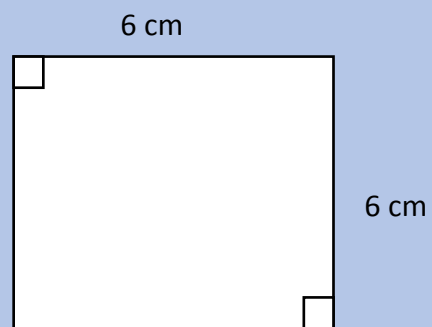
## PERIMETER

Perimeter is the distance all the way round a figure.



$$\begin{aligned}
 \text{Perimeter} &= 2(\text{length} + \text{width}) \\
 &= 2(8 + 6) \text{ cm} \\
 &= 2 \times 14 \text{ cm} \\
 &= 28 \text{ cm}
 \end{aligned}$$

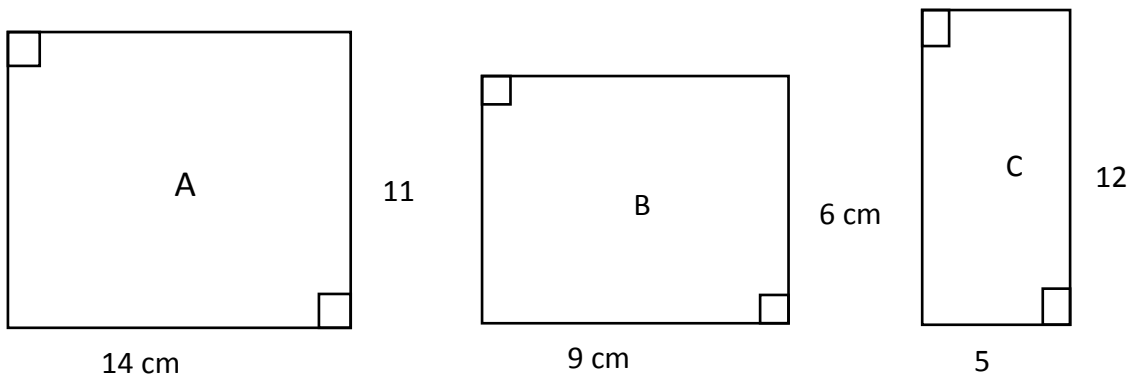
Note:  $P = 2(L + W)$



$$\begin{aligned}
 \text{Perimeter} &= 2(6 + 6) \\
 &= 2 \times 2 \times 6 \\
 &= 4 \times 6 \\
 &= 24
 \end{aligned}$$

$P = 4S$

1. Use the formula  $P = 2(L + W)$  to find the perimeter of each of the figures below:



2. Calculate the perimeter of squares whose sides are:

- (a) 13cm                      (b) 9cm                      (c) 16cm                      (d) 14cm

## AREA

**Rectangle**

**A**

Squares along the length are 6  
Squares along the width are 3  
Area =  $6 \times 3 = 18$  sq. units

**B**

Length = 6 cm  
Width = 3 cm  
Area =  $L \times W$   
=  $6 \text{ cm} \times 3 \text{ cm}$   
=  $18 \text{ cm}^2$

**Square**

**A**

Squares along the side are 3  
Squares along the other side are 3  
Area =  $3 \times 3$   
= 9 sq. units

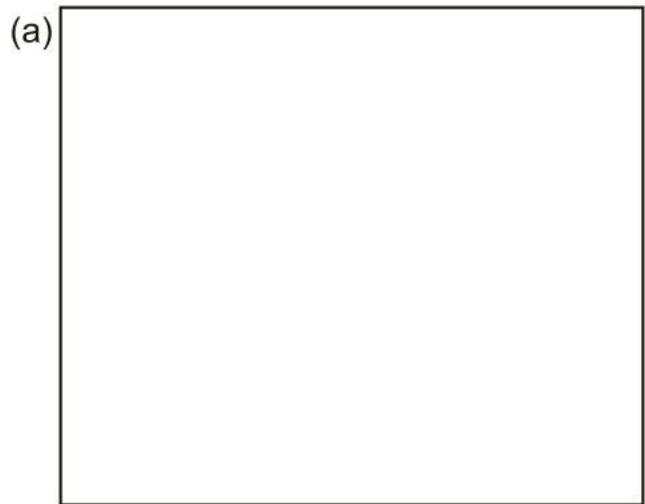
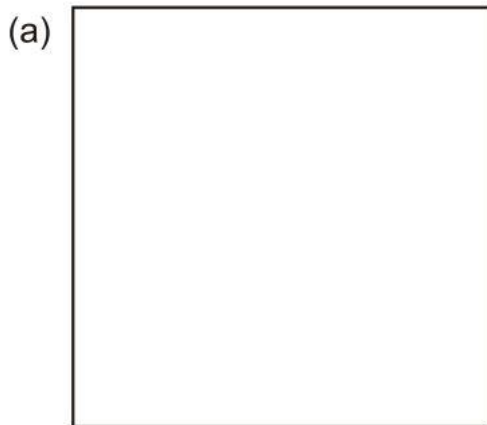
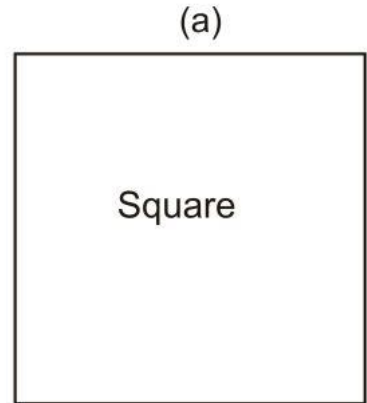
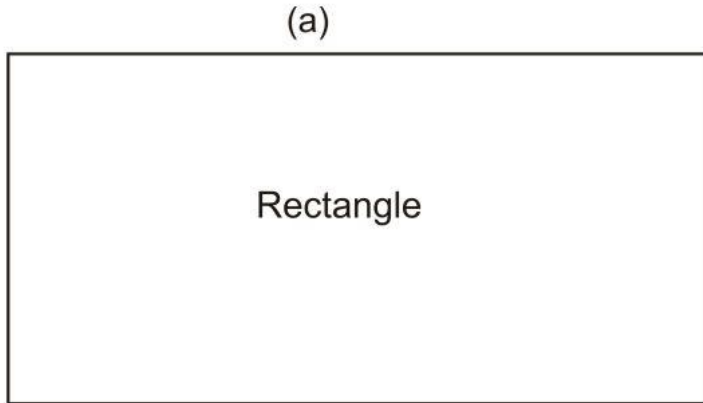
**B**

Side is 3 cm  
Area =  $S \times S$   
=  $3 \text{ cm} \times 3 \text{ cm} = 9 \text{ cm}^2$

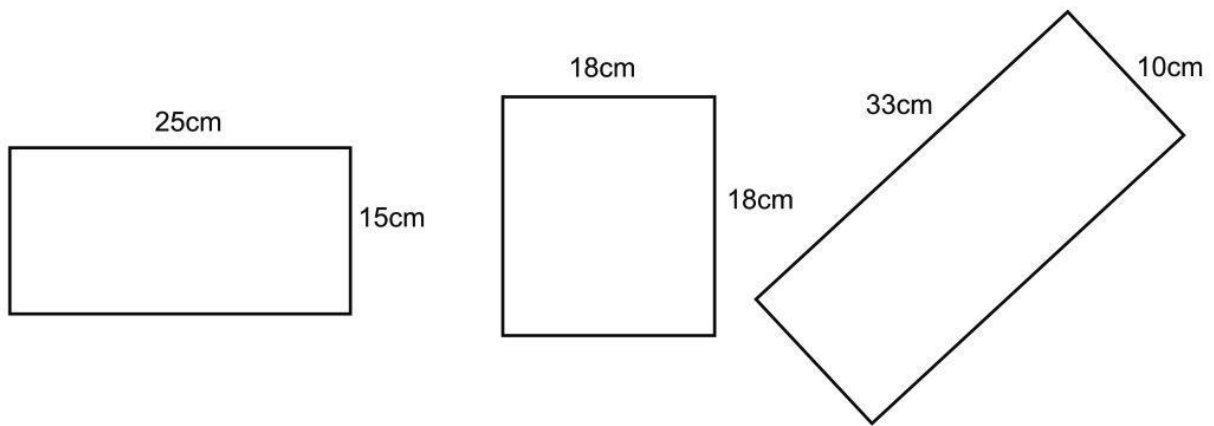




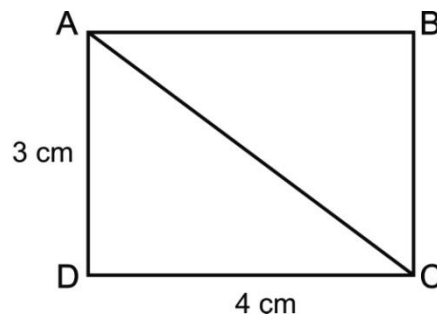
1. Measure the sides of the following figures and then find their areas:



3. Find the area of the following figures in square centimetres ( $\text{cm}^2$ ) . The first one has been done for you.



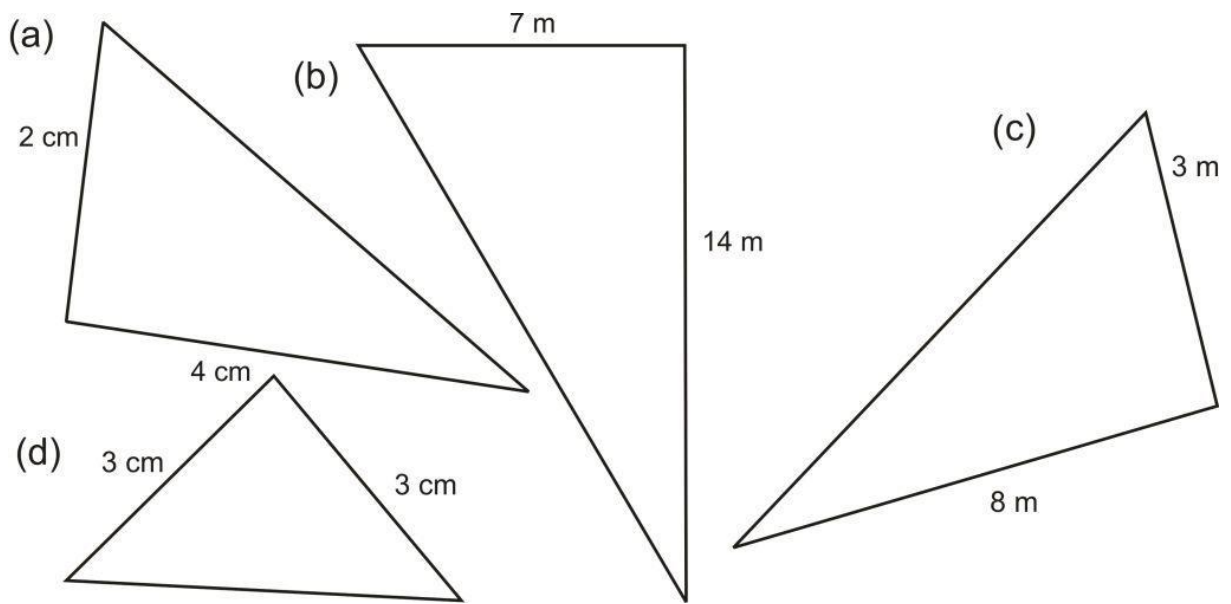
1. ABCD is a rectangle. What is its Trace the rectangle on a piece of paper and cut it out. Cut the paper along the diagonal AC.



- (a) What is the shape of the two figures you get?  
 (b) What is the name of the largest angle in each piece?  
 (c) Can the two pieces fit exactly on top of one another? What does this tell us about the size of the two pieces and the size of the rectangle?

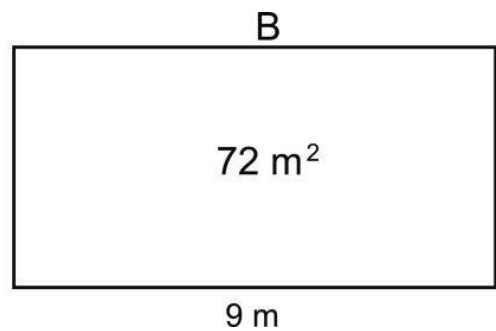
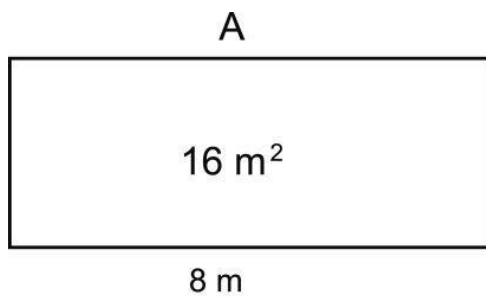
Area of the rectangle	=	$(3 \times 4) \text{ cm}^2$
Area of any one triangle	=	$\frac{1}{2} \times (3 \times 4) \text{ cm}^2$
	=	$\frac{1}{2} \times 12 \text{ cm}^2$
	=	$6 \text{ cm}^2$

2. Find the area of these right-angled triangles:

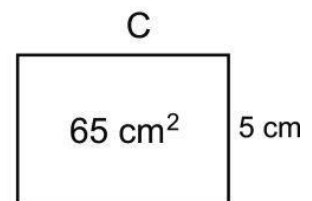
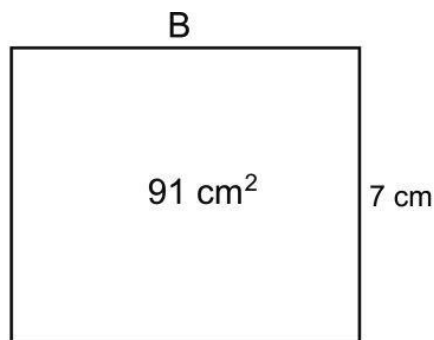
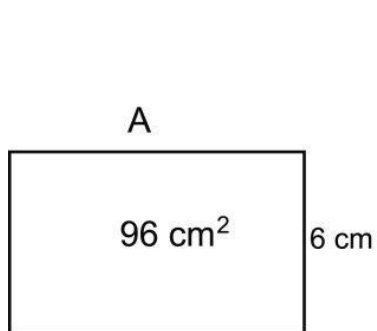


***FINDING THE LENGTH OR WIDTH***

1. Find the width of figures A and B below:



2. Find the lengths of figures A, B, and C below:



1 tenth	$= \frac{1}{10}$	0.1
1 hundredth	$= \frac{1}{100}$	0.01
1 thousandth	$= \frac{1}{1000}$	0.001

1. Fill in the given numbers in the place value table.

	thousands	hundreds	tens	ones	tenths	hundredths	thousandths
a) 51.6			5	1	6		
b) 102.001							
c) 831.54							
d) 7.504							
e) 0.05							
f) 4 018.01							

Complete the following. The first one has been done for you.

- (a) The place value of the digit 3 in 4.32 is tenths \_\_\_\_\_
- (b) The place value of the digit 2 in 4.32 is \_\_\_\_\_
- (c) The place value of the digit 5 in 35.327 is \_\_\_\_\_
- (d) The place value of digit 5 in 327.35 is \_\_\_\_\_
- (e) The place value of the digit 9 in 3 915.01 is \_\_\_\_\_
- (f) The place value of digit 7 in 35.327 is \_\_\_\_\_

## CONVERSION OF FRACTIONS TO DECIMALS

$$1 \text{ tenth} = \frac{1}{10} = 0.1$$

Write  $\frac{7}{5}$  as a decimal

$$\frac{7}{5} \times \frac{2}{2} = \frac{14}{10} = 1.4$$

$$\begin{array}{r} \text{or } 100 \quad \begin{array}{r} 1.4 \\ \hline 140 \\ -100 \\ \hline 40.0 \\ -40.0 \\ \hline 0 \end{array} \\ = 1.4 \end{array}$$

$$1 \text{ hundredth} = \frac{1}{100} = 0.01$$

Write  $\frac{17}{25}$  as a decimal

$$\frac{17}{25} \times \frac{4}{4} = \frac{68}{100} = 0.68$$

$$\begin{array}{r} \text{or } 100 \quad \begin{array}{r} 0.68 \\ \hline 68.0 \\ -60 \\ \hline 8.0 \\ -8.0 \\ \hline 0 \end{array} \\ = 0.68 \end{array}$$

$$1 \text{ hundredth} = \frac{1}{1000} = 0.001$$

Write  $\frac{23}{40}$  as a decimal

$$\frac{23}{40} \times \frac{25}{25} = \frac{575}{1000} = 0.575$$

1. Write the following as decimals:

(a)  $\frac{4}{10}$       (b)  $\frac{6}{10}$       (c)  $\frac{5}{100}$       (d)  $\frac{25}{1000}$

Convert 0.375 into a fraction.

$$\begin{aligned} 0.375 &= \frac{375}{1000} \\ &= \frac{375 \div 5}{1000 \div 5} \\ &= \frac{75 \div 25}{200 \div 25} \\ &= \frac{3}{8} \end{aligned}$$

1. Write down as fractions

(a) 0.75    (b) 0.075    (c) 0.625    (d) 0.45

2. Which is greater

- (a) or 0.07      (b) or 0.075      (c)  $\frac{2}{5}$  or

3. Arrange the following in order starting from the smallest.

(a)  $0.22, \frac{1}{4}, 0.5$       (b)  $\frac{3}{5}, 0.74, \frac{3}{4}, 0.25$

(c)  $0.46, \frac{3}{10}, 0.09$

### ***ADDITION AND SUBTRACTION OF DECIMALS***

Work out the following:

1.

(a) 
$$\begin{array}{r} 6.4 \\ + 0.4 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 8.7 \\ + 2.5 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 7.2 \\ + 3.9 \\ \hline \hline \end{array}$$
  
(b)

(c) 
$$\begin{array}{r} 0.9 \\ + 2.3 \\ \hline \hline \end{array}$$

(d) 
$$\begin{array}{r} 8.6 \\ - 6.7 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 6.9 \\ - 3.5 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 4.0 \\ - 2.5 \\ \hline \hline \end{array}$$
  
(e)

(f) 
$$\begin{array}{r} 2.1 \\ - 1.2 \\ \hline \hline \end{array}$$

2.

a) 
$$\begin{array}{r} 3.75 \\ + 3.91 \\ \hline \hline \end{array}$$

b) 
$$\begin{array}{r} 7.53 \\ + 3.77 \\ \hline \hline \end{array}$$

c) 
$$\begin{array}{r} 4.89 \\ + 3.29 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 9.89 \\ + 6.29 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 6.25 \\ - 3.47 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 4.23 \\ - 1.6 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 3.91 \\ - 2.82 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 10.8 \\ - 8.98 \\ \hline \hline \end{array}$$

### ***MULTIPLICATION***

(i) $0.4 \times 4 =$ $\frac{4}{10} \times 4 = \frac{16}{10} = 1.6$	(ii) $70.23 \times 14$ $\frac{7023}{100} \times 14$ $= \frac{98322}{100}$	(iii) $136 \times 0.015$ $136 \times \frac{15}{1000}$ $= \frac{2040}{1000}$
---	---	---

	= 983.22	= 2.040 or 2.04
--	----------	-----------------

1. Express the following decimals as fractions in their simplest forms:

(a) 0.8

(b) 0.4

(c) 0.15

(d) 0.72

(e) 0.99

(f) 0.1

2. Work out

(a)  $0.9 \times 3$

(b)  $1.2 \times 4$

(c)  $3.1 \times 3$

(d)  $0.12 \times 6$

(e)  $0.24 \times 5$

(f)  $6 \times 2.5$

(g)  $3.3 \times 5$

(h)  $0.18 \times 7$

(i)  $2.14 \times 3$

(j)  $0.23 \times 3$

(k)  $1.11 \times 1$

(l)  $1.20 \times 0$

***ESTIMATING TIME BY SHADOWS***

Copy and complete the following table.

<b>TIME</b>	<b>LENGTH OF SHADOW</b>	<b>DIRECTION OF SHADOW</b>
8.00 morning		
10.00 morning		
12.00 midday		
2.00 afternoon		
4.00 afternoon		

1. (a) When is the shadow longest?  
(b) What direction is it facing when it is longest?
  2. (a) When is the shadow shortest?  
(b) What is the direction of the shadow then?
1. Change the following to minutes:
    - (a) 3 hours
    - (b)  $4\frac{1}{2}$  hours
    - (c)  $3\frac{1}{4}$  hours
    - (d) 12 hours
  2. Change the following to hours:
    - (a) 240 minutes
    - (b) 15 minutes
    - (c) 150 minutes
    - (d) 405 minutes

***TIME IN SECONDS***

1. Change the following into seconds:
  - (a) 5 minutes
  - (b) 10 minutes
  - (c) 18 minutes
  - (b) 45 minutes
  - (e) 15 minutes
  - (f) 3 minutes 30 seconds



### Changing seconds to minutes:

(a) How many minutes are there in 180 seconds?

$$60 \text{ s} = 1 \text{ min}$$

$$180 \text{ s} = (180 \div 60) \text{ min}$$

$$= 3 \text{ min}$$

(ii) How many minutes and seconds are in 215 seconds?

$$60 \text{ s} = 1 \text{ min}$$

$$215 \text{ s} = (215 \div 60) \text{ s}$$

$$= 3 \text{ min } 35 \text{ s}$$

OR

$$\begin{array}{r} 3 \text{ min rem } 35 \text{ s} \\ 60 \overline{) 215} \\ \underline{-180} \\ 35 \\ \therefore 215 \text{ s} = 3 \text{ min } 35 \text{ s} \end{array}$$

2. Change the following into minutes:

(a) 120s

(b) 360s

(c) 840 s

(d) 420 s

(e) 240 s

(f) 720 s

### ADDITION

1.

h	min
3	35
+2	15
<hr/>	
<hr/>	

2.

h	min
24	36
+28	17
<hr/>	
<hr/>	

### SUBTRACTION

#### Example 1

h	min	s
3	40	45
-1	20	30
<hr/>		
2	20	15

#### Example 2

h	min	s
4	25	15
-2	15	30
<hr/>		
2	9	45

(i) We cannot subtract 30 s from 15 s.

We therefore borrow 1 min from 25 min and add to 15s

$$15 \text{ s} + 1 \text{ min} = 15 \text{ s} + 60 \text{ s}$$

$$= 75 \text{ s}$$

$$75 \text{ s} - 30 \text{ s} = 45 \text{ s}$$

Record 45 s in the seconds column.

(ii) After borrowing 1 min from 25 min, we have 24 min left.

$$\begin{aligned} \text{Now } 24 \text{ min} - 15 \text{ min} \\ = 9 \text{ min} \end{aligned}$$

Record 9 min

(iii)  $4\text{h} - 2\text{h} = 2\text{h}$ , Record 2 h.

Our answer is 2 h 9 min 45 s

## ***DURATION***

1. How many hours before noon are the following times:

(a) 8.00a.m.

(b) 10.00a.m.

(c) 11.00a.m.

(d) 7.00 a.m.

(e) 2.00a.m.

(f) 1.00a.m.

(g) 4.00 a.m.

(h) 5.00 a.m.

2. How long is it from:

(a) 7.00 a.m. to 12.00 noon?

(b) 8.00 a.m. to 11.00a.m.?

(c) 8.00 a.m. to 9.00 a.m.?

(d) 1.00 a.m. to 11.00 a.m.?

## ***MULTIPLICATION***

1. Multiply 2 h 20 min by 5

h	min
20	20
x	5
<hr/>	
11	40
<hr/>	

2. Multiply 3 min 45 s by 4

1. Multiply minutes:  $20 \times 5 = 100$

2. Convert:  $100 \text{ min} = 1 \text{ h } 40 \text{ min}$

3. Record 40 min and carry over 1 h

4. Multiply hours:  $2 \times 5 = 10$

5. Add hours:  $= 10 + 1 = 11 \text{ h}$

6. Record 11 h

1. Multiply seconds:  $45 \times 4 = 180 \text{ s}$

2. Convert:  $180 \text{ s} = 3 \text{ min } 0 \text{ s}$

h	min
3	45
x	4
15	0

3. Record 0 s and carry over 3 min
4. Multiply minutes:  $3 \times 4 = 12$
5. Add minutes:  $12 + 3 = 15$
6. Record 15 min.

### **MULTIPLY**

- |                    |                   |
|--------------------|-------------------|
| 1. 4 h 35 min x 4  | 2. 3 h 40 min X 5 |
| 3. 3 min 15 s X 10 | 4. 6 min 40 s X 9 |

### **DIVISION**

1. Multiply 2 h 20 min by 5

6	<table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="text-align: right; padding-right: 10px;">3 h 15 min</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">19 h 30 min</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">18 h</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">1 h = 60 min</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">90 min</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">90 min</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">0</td> <td></td> </tr> </table>	3 h 15 min		19 h 30 min		18 h		1 h = 60 min		90 min		90 min		0	
3 h 15 min															
19 h 30 min															
18 h															
1 h = 60 min															
90 min															
90 min															
0															

2. Multiply 3 min 45 s by 4

7	<table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="text-align: right; padding-right: 10px;">0 min 40 s</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">4 min 40s</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">0 min</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">4 min = 240 s</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">280 s</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">280 s</td> <td style="border-top: 1px solid black;"></td> </tr> <tr> <td style="text-align: right; padding-right: 10px;">0</td> <td></td> </tr> </table>	0 min 40 s		4 min 40s		0 min		4 min = 240 s		280 s		280 s		0	
0 min 40 s															
4 min 40s															
0 min															
4 min = 240 s															
280 s															
280 s															
0															

1. Divide hours:  $19 \div 6 = 3 \text{ rem } 1$
2. Record 3 h
3. Convert 1 h to min = 60 min
4. Add minutes:  $30 + 60 = 90$
5. Divide minutes:  $90 \div 6 = 15$
6. Record 15 min

1. Divide minutes:  $4 \div 7$  is not possible
2. Convert 4 min to s:  $4 \times 60 = 240 \text{ s}$
3. Add seconds:  $40 + 240 = 280$
4. Divide seconds:  $280 \div 7 = 40$
5. Record 40 s

### **Divide**

- |                         |                       |
|-------------------------|-----------------------|
| 1. 25 h 20 min $\div$ 4 | 2. 4h 15 min $\div$ 3 |
|-------------------------|-----------------------|

### ***COLLECTION AND ADDITION OF LIKE TERMS***

1. Add:

- (a)  $x + x$                       (b)  $9e + e$                       (c)  $7t + 5t$   
(d)  $m + 3m + 2m$               (e)  $2k + 3k + 10k$               (f)  $b + b + 8b$

2. Collect like terms:

- (a)  $t + s + t$                       (b)  $2p + 3n + 5p$                       (c)  $7k + 8k + n$   
(d)  $20a + a + 10c$               (e)  $n + s + n + s$                       (f)  $15p + 2t + p + 17t$

### ***COLLECTION AND SUBTRACTION OF LIKE TERMS***

1.      (a)  $4p - 2p =$                       (b)  $6d - d =$                       (c)  $10b - 9b =$                       (d)  $3x - x =$

Simplify

1.  $3a + 4a = \underline{7a}$                       2.  $8b - \underline{2b} = 6b$                       3.  $2c - 3c - 4c + 7c$

collect the numbers to be added;  
and the numbers to be subtracted

$$2c + 7c - 3c - 4c$$

Find the total of each and subtract.

$$9c - 7c = \underline{2c}$$

Work out the following:

1.  $2a + 5a$                                       2.  $8a + 3a + 6a$   
3.  $14x - 12x$                                       4.  $17c - 5c + 2c - 4c$

### ***SOLVING EQUATIONS***

Find the unknown in the following:

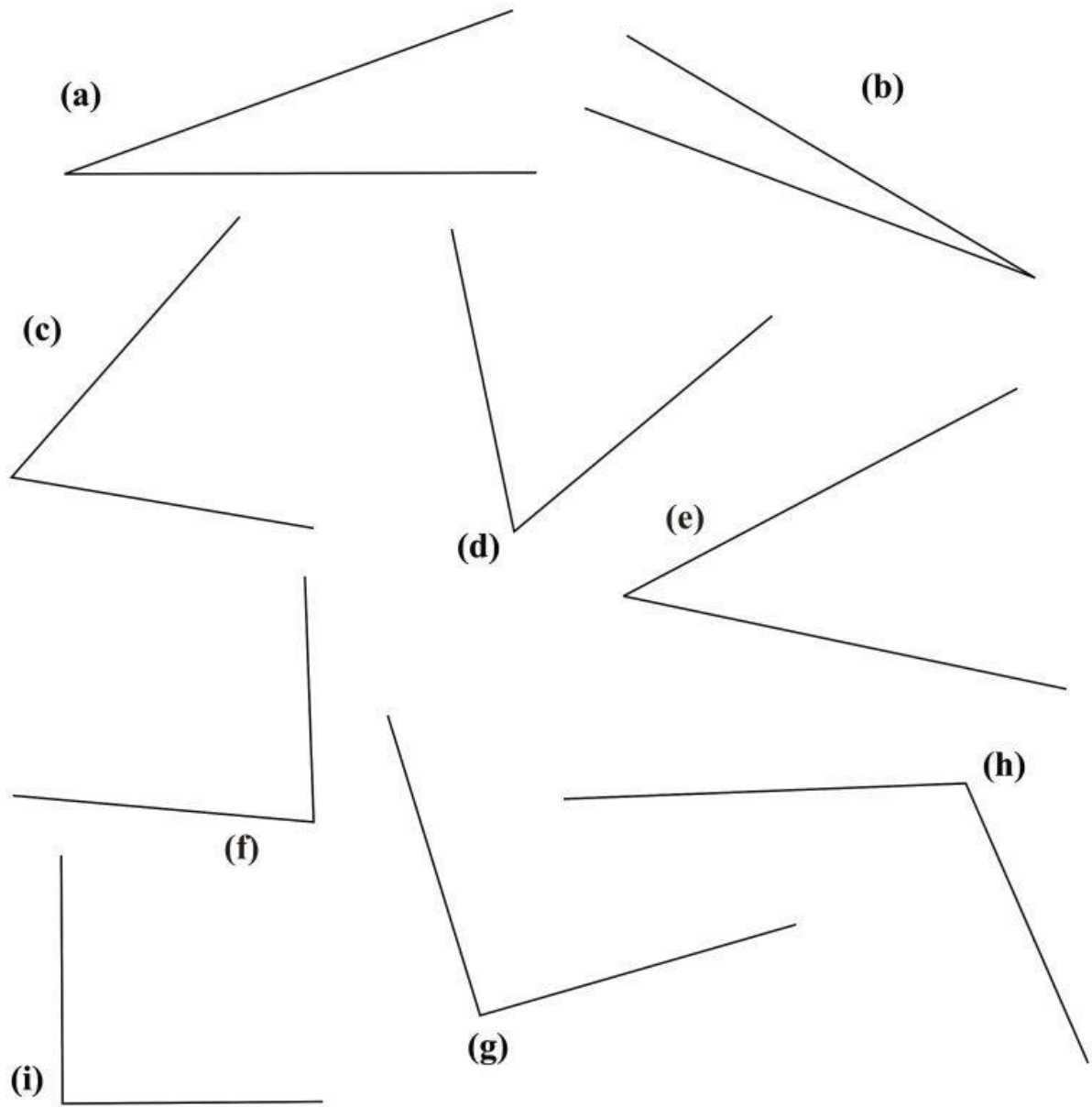
1.       $b + 5 = 18$   
2.       $a + 9 = 22$

3.  $12 + k = 31$
4.  $y + 6 = 7$
5.  $q + 18 = 19$
6.  $t + 75 = 100$

## UNIT 9:

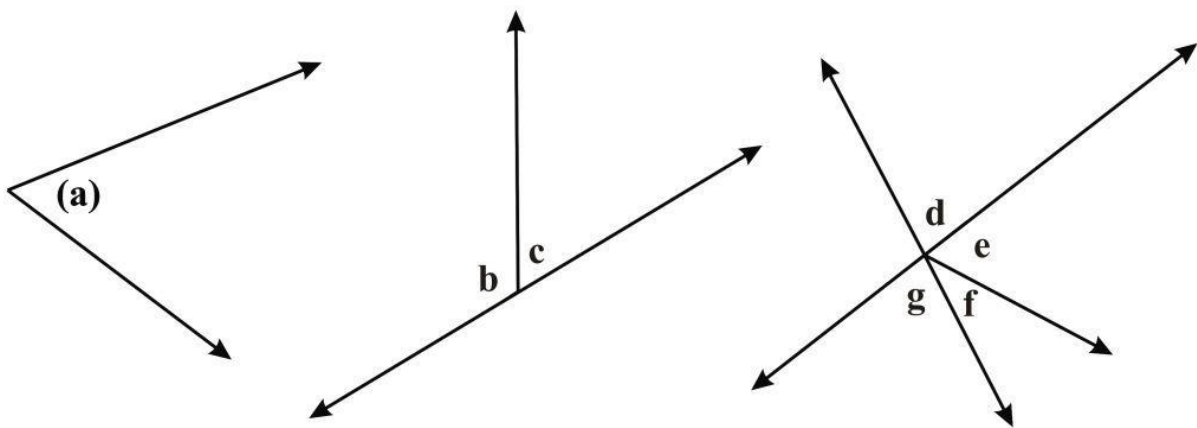
## GEOMETRY

### *MEASURING ANGLES*



***MEASURING ANGLES***

Use the half disc to measure these angles to the nearest unit angle.



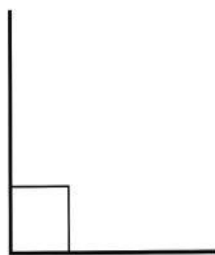
What is the sum of the measures of:

(a) angles b and c?

(b) angles d, e and f?

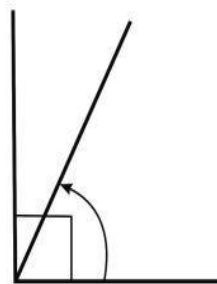
(c) angles e, f and g?

## TYPES OF ANGLES



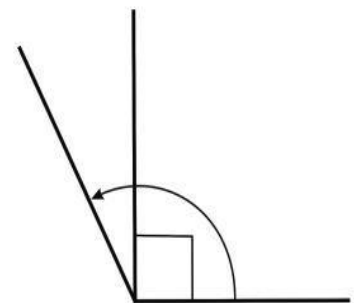
A

RIGHT ANGLE



B

ACUTE ANGLE  
(Smaller than right angle)



C

OBTUSE ANGLE  
(Bigger than right angle)

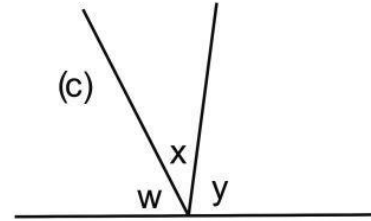
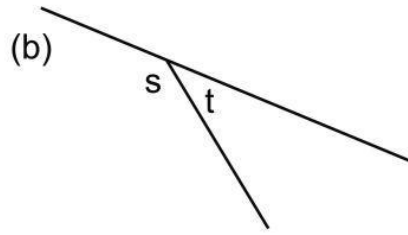
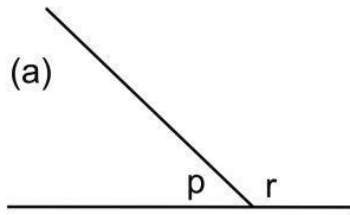


STRAIGHT LINE  
(2 right angles)



REFLEX ANGLE  
(Bigger than  $180^\circ$ )

2. Measure the angles shown in the figures below:



(a) p

(b) s

(c) w

(d) r

(e) t

(f) x

(g)  $p + r$

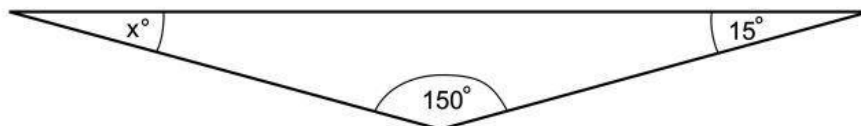
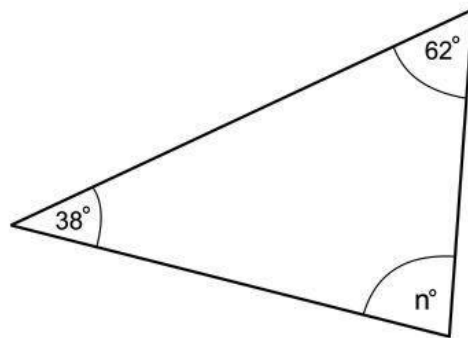
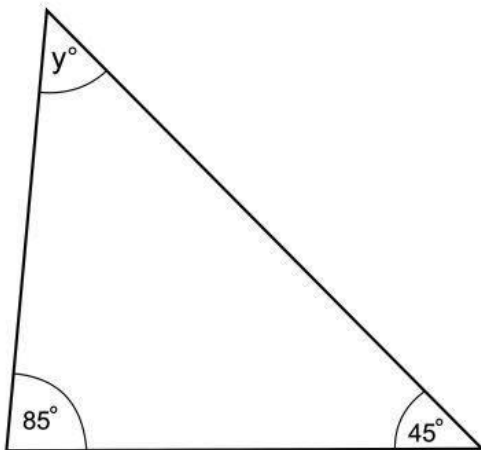
(h)  $s + t$

(i) y

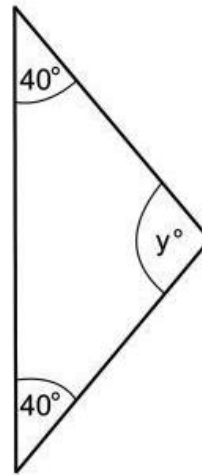
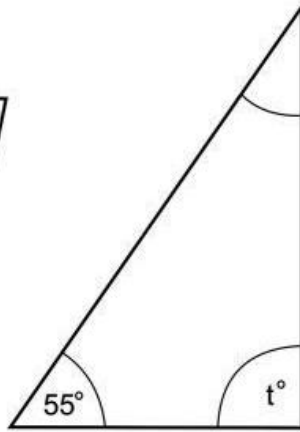
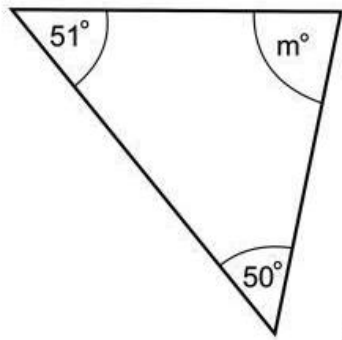
(k)  $w + x + y$

## TRIANGLES

1. Calculate the sizes of the angles marked by small letters:







**REVISION**

1. How many  $\frac{1}{2}$  kg packets are there in 5 kg?
2. How many half kilograms are there in 35 kg?
3. Makwach weighs 71 kg . Mobiri weighs 65.2 kg. What is the difference in their mass?
4. A bag full of sugar weighs 100 kg. How many packets of sugar weighing 2 kg each can be made from the bag?
5. A boy packed sugar in 1 kg packets. How many packets did he make from 2 kg of sugar?

- (a) We use kilograms to weigh heavy objects, e.g. a tin of maize.
- (b) We use grams to weigh light objects, e.g. small amounts of salt,
- $$1 \text{ kg} = 1000 \text{ g}$$
- $$\frac{1}{2} \text{ kg} = 500 \text{ g}$$
- $$\frac{1}{4} \text{ kg} = 250 \text{ g}$$

1. What is more suitable to use, kilogram or gram, when weighing the following?
  - (a) a spoon full of sugar;
  - (b) a sack full of groundnuts;
  - (c) a pencil;
  - (d) your weight;

**Example 1**

Change 3 500 grams into kilograms.

$$1\ 000 \text{ g} = 1 \text{ kg}$$

$$3500 \text{ g} = \frac{3500}{1000} \text{ kg}$$

$$= \frac{35}{10} \text{ kg}$$

$$= 3.5 \text{ kg or } 3\frac{1}{2} \text{ kg}$$

**Example 2**

Change  $2\frac{3}{4}$  kg into grams.

$$1 \text{ kg} = 1000 \text{ g}$$

$$2 \text{ kg} = (1000 \times 2) \text{ g}$$

$$= 2000 \text{ g}$$

$$\frac{3}{4} \text{ kg} = 750 \text{ g i.e. } (\frac{3}{4} \times 1000 = 750 \text{ g})$$

$$\therefore 2\frac{3}{4} \text{ kg} = 2000 \text{ g} + 750 \text{ g}$$

$$= 2750 \text{ g}$$

Or Since  $1 \text{ kg} = 1000 \text{ g}$

$$\text{then } 2\frac{3}{4} \text{ kg} = (2\frac{3}{4} \times 1000) \text{ g}$$

$$= (\frac{11}{4} \times 1000) \text{ g}$$

$$= 2750 \text{ g}$$

1. Change the following into kilograms:

- (a) 500 g                      (b) 6000 g      (c) 1000 g      (d) 750 g

2. Change the following into grams:

- (a)  $\frac{1}{2}$  kg                      (b) 6 kg                      (c)  $\frac{3}{4}$  kg

**Example 3**

Chool bought 24 tins of cooking fat. Each tin contained 500 g of the fat. How many kilograms of fat did he buy?

$$1 \text{ tin weighs } 500 \text{ g}$$

$$24 \text{ tins weigh } (24 \times 500) \text{ g}$$

$$(24 \times 500) \text{ g} = 12000 \text{ g}$$

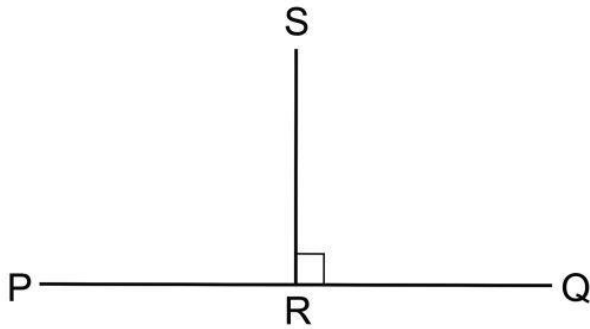
$$1000 \text{ g} = 1 \text{ kg}$$

$$\therefore 12000 \text{ g} = \frac{12000}{1000} \text{ kg}$$

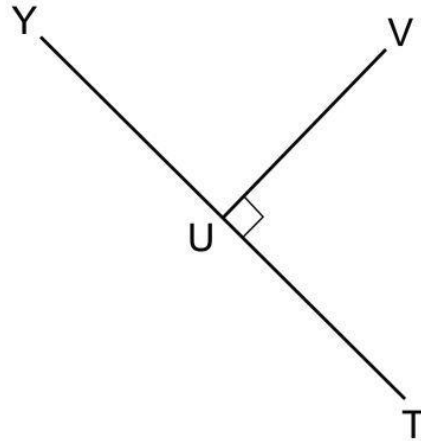
$$= 12 \text{ kg}$$

5. There are 200 packets of tea leaves in a carton. Each packet weighs 250 g. What is the total mass of tea leaves in the carton? (Answer in kg.)

**PERPENDICULAR LINES**

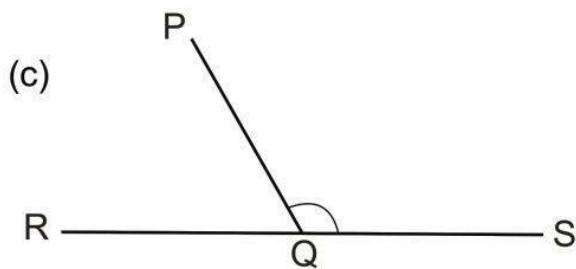
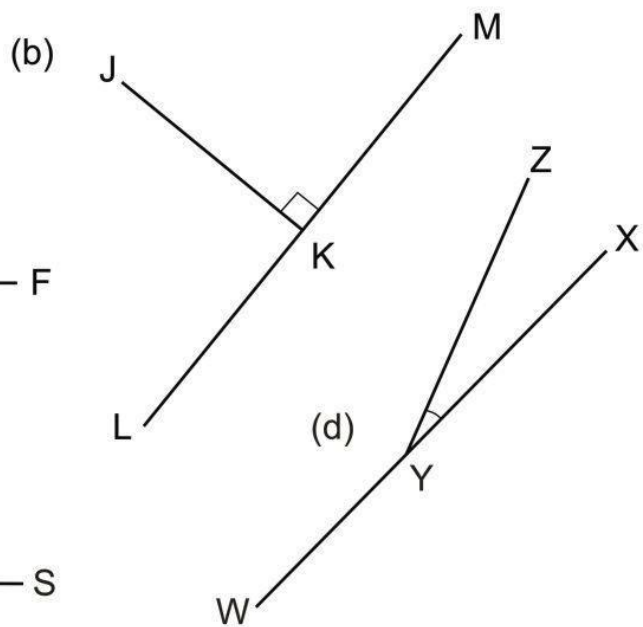
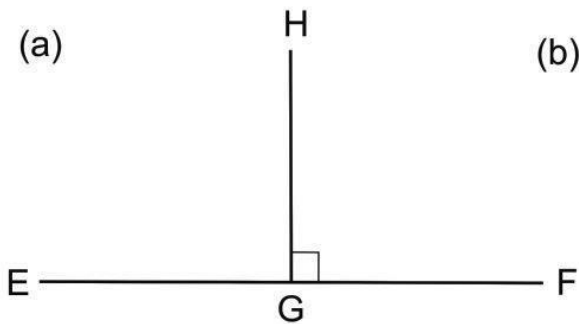


SR is perpendicular to PQ



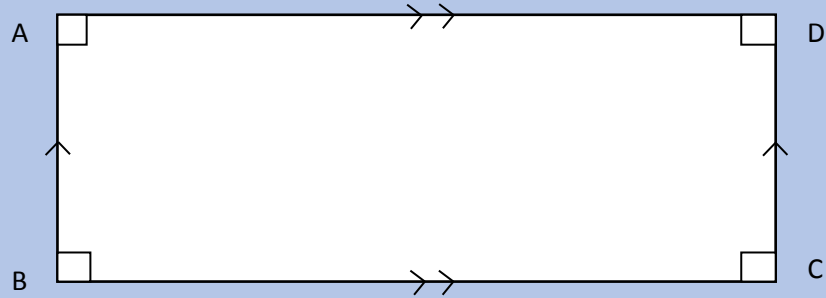
UV is perpendicular to YU

Measure the angles shown and name the lines that are perpendicular



## RECTANGLE

Measure the sides and angles of this rectangle and fill in the blank spaces.



Sides

Angles

AB =

CD =

ABC =

BCD =

BC =

DA =

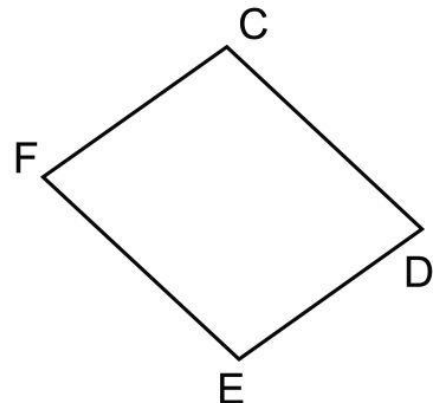
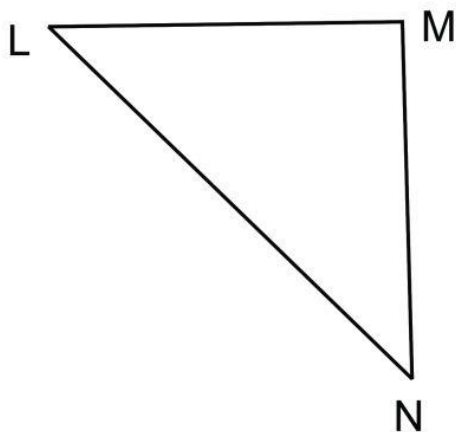
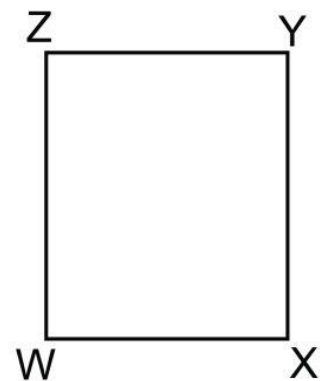
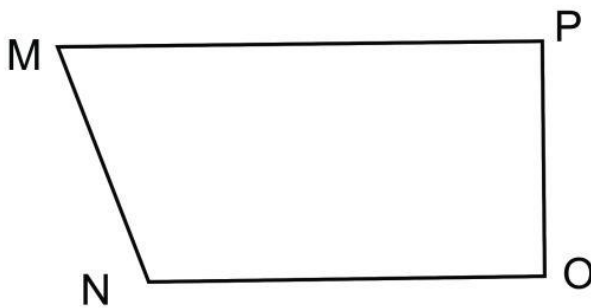
CDA =

DAB =

For a rectangle:

- (a) Two opposite sides are equal.    (b) All angles are right angles ( $90^\circ$ )  
 (c) Opposite sides are parallel.

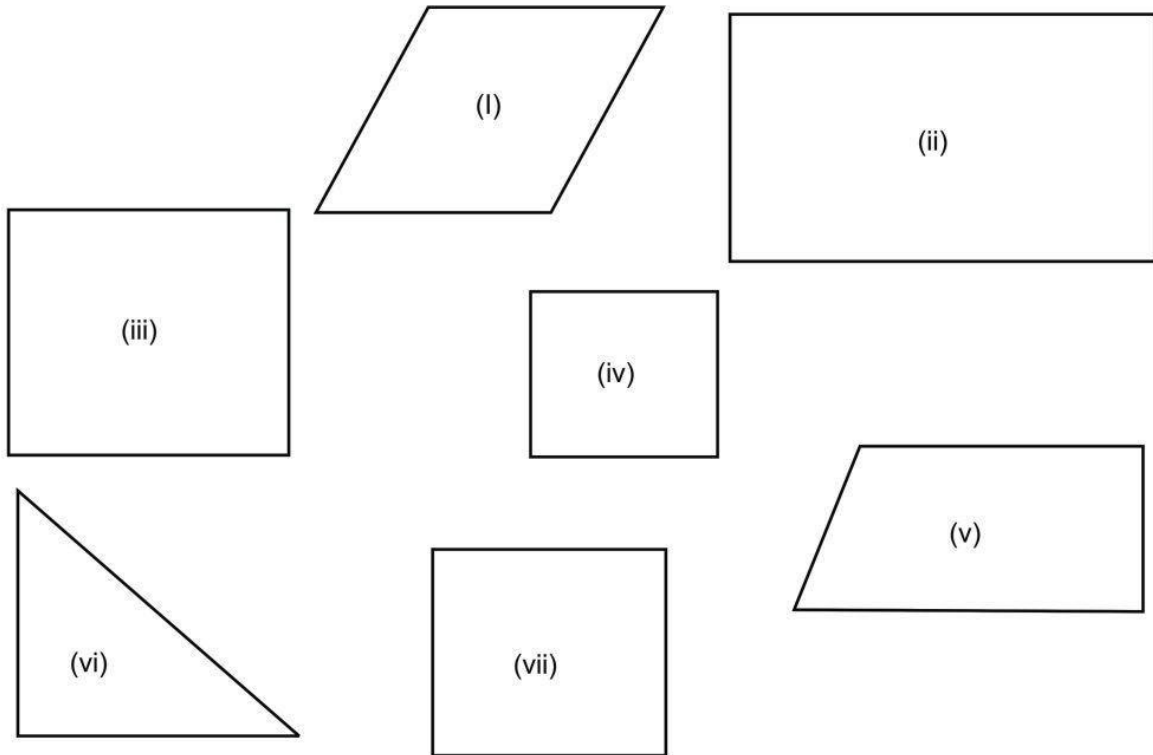
Which of these figures are rectangles?



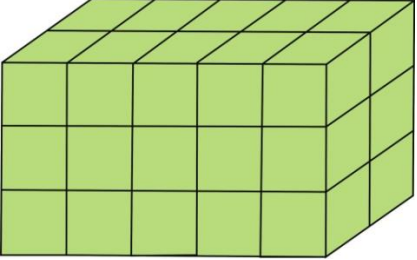
1. Which of these diagrams are:

a) Squares?

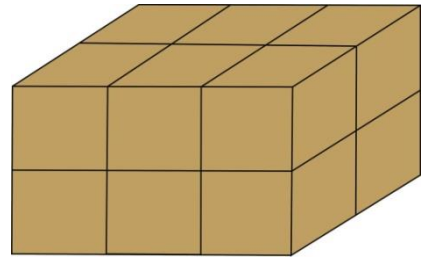
b) Rectangles?



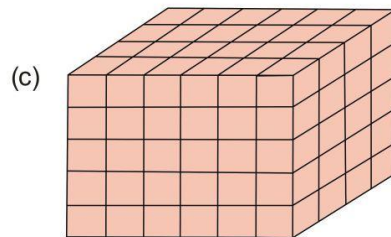
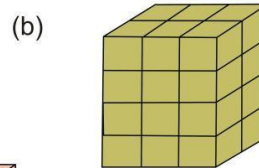
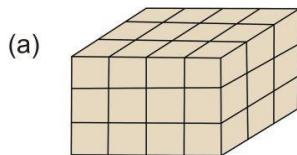
**VOLUME**

	<p>This is a stack of cubes. How many cubes are in the stack?</p> <p>Each layer has 5 columns and 2 rows.</p> <p>There are 3 such layers.</p> <p>We describe the stack as 5 by 2 by 3</p> <p>Number of cubes in the stack</p> $= 5 \times 2 \times 3$ $= 30 \text{ cubes}$
---	--

1. a) How many layers are there in this stack?
- b) How many cubes are there in each layer?
- c) How many cubes are there altogether in the stack?

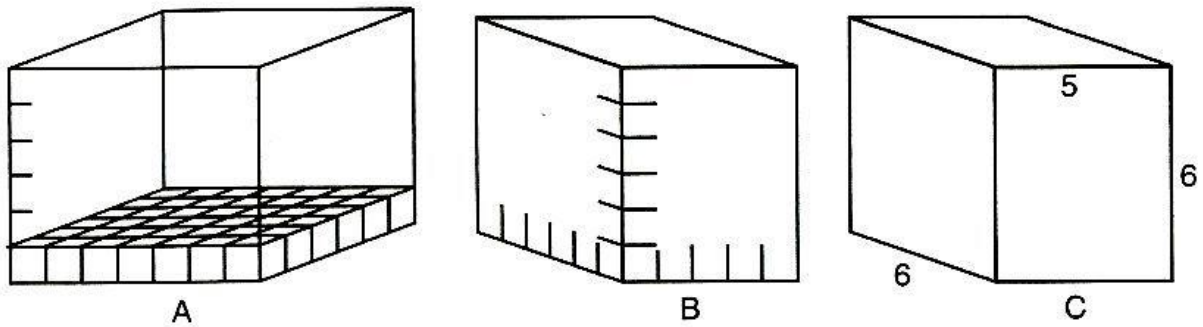


2. How many cubes are arranged to form each of the following stacks?



3. Madding arranged bricks in three layers. Each layer had three columns and four rows. How many bricks did he arrange altogether?

These blocks can be made up of centimetre cubes. Study them and answer the questions below:



- How many layers will be needed to make each of the blocks A, B and C?
- How many rows will be needed to make each layer?
- How many columns will be needed to make each layer?
- How many cubes will be needed to make each block?

### ***CAPACITY***

$$1 \text{ Litre} = 1\,000 \text{ millilitres (ml)}$$

$$\frac{1}{2} \text{ Litre} = 500 \text{ millilitres (ml)}$$

$$\frac{1}{4} \text{ Litre} = 250 \text{ millilitres (ml)}$$

1. Change the following into milliliters:

(a) 3 litres

(b) 4.5 litres

(c)  $2\frac{2}{8}$  litres



It is not possible to draw a length of an object 3 m long to fit on a piece of paper. This can be represented by a length of 3 cm, using a scale "1 cm represents 1 m"

**Example**

In a scale "1 cm represents 10 m"

$\frac{1}{2}$  cm will represent 5 m, i.e.  $(\frac{1}{2} \times 10)$  m = 5 m.

2 cm will represent 20 m, i.e.  $(2 \times 10)$  m = 20 m.

5 m and 20 m are the real measurements while  $\frac{1}{2}$  cm and 2 cm are the drawing measurements.

1. Complete the table below: ("rep" means "represents")

Scale	Real Measurement	Drawing Measurement
1 cm rep 5 m	20m	
1 cm rep 10 m		7cm
	75m	3 cm
1 cm rep 1 6 m	12m	
1 cm rep 20 m		0.5 cm
	75m	1.5 cm

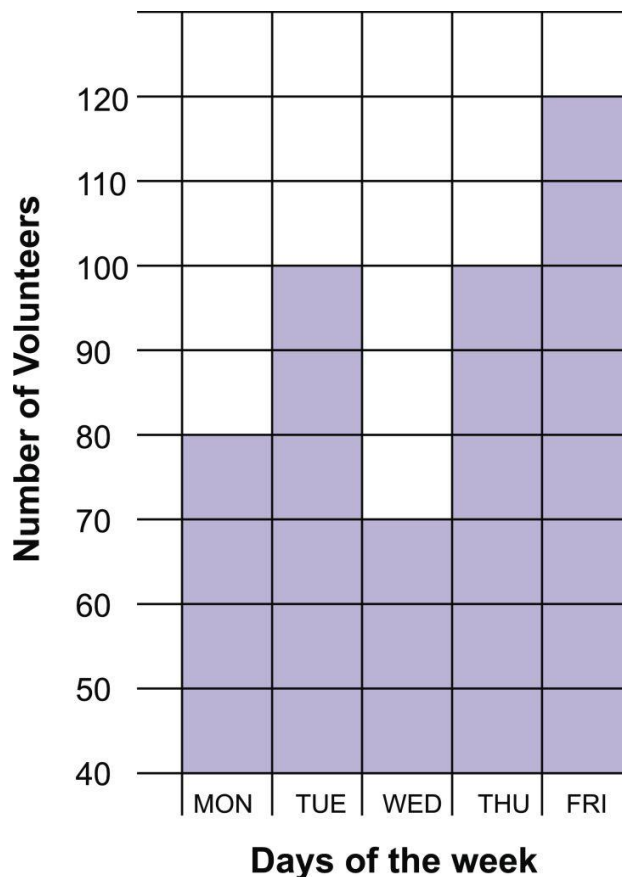
1. Use the scale "1 cm represents 1 m", to draw the following lines

- (a) 10 m long      (b) 8 m long      (c) 5 m long      (d) 13 m long
- (e) 16 m long      (f) 15 m long

The table below shows the amount of money Mrs. Makuol spent on buying medicine for her cows every month in a certain year. Use the information to draw a bar graph. Take 1 cm to represent 100 ssp in the vertical scale and 1 cm to represent one month in the horizontal scale.

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec.
Amount in ssp.	600	500	450	700	900	600	850	250	675	650	400	1250

1. The graph below shows the number of people who volunteered talk to the community about HIV/AIDS in one week. Study it and use it to answer questions (a) to (h) that follow.



- (a) Which day of the week had the least number of volunteers?
- (b) How many volunteers participated on Thursday?
- (c) How many more volunteers participated on Tuesday than on Monday?
- (d) How many volunteers gave talks in the first three days of the week?

- (e) Which day of the week had the most number of volunteers?
- (f) On which days were the number of volunteers the same?