South Sudan

PASTORALISTS LIVELIHOOD AND EDUCATION FIELD SCHOOLS

Primary Mathematics

Pupils Book 3

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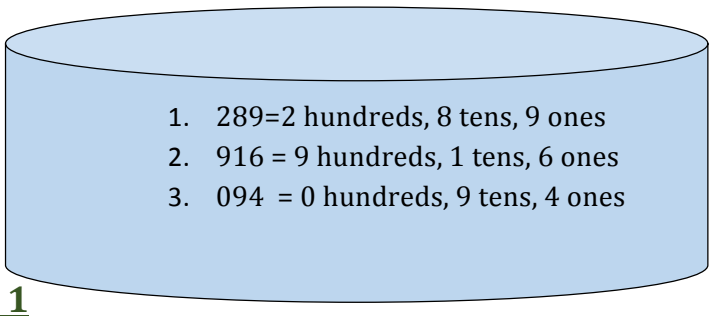
UNIT 1: NUMBERS

Place Value

Identifying place value of numbers up to three digits.

Look at these numbers:



Exercise 1

Copy and compete the following:

1) 3 hundreds, 0 tens, 7 ones =_____

2) 5 hundreds, 7tens, 8 ones =_____

3) 1 hundreds, 2tens, 0 ones =_____

4) 4 hundreds, 6 tens, 6 ones =_____

5) 7 hundreds, 9 tens, 4 ones =_____

Exercise 2:

Copy and complete the following:

1) 429 =___hundreds, ___tens, ___ones

2) 821=___hundreds, ___tens, ___ones

3) 171=___hundreds, ___tens, ___ones

4) 540= ___hundreds, ___tens, ___ones

Exercise 3:

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

(a) The place value of the digit 2 in 4.32 is_____.

(b) The place value of the digit 5 in 35.327 is_____.

(c) The place value of digit 5 in 327.35 is_____.

(d) The place value of the digit 9 in 3 915.01 is_____.

(e) The place value of digit 7 in 35.327 is_____.

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) Fifty six thousand three hundred and seventy eight.
   (b) Forty eight thousand nine hundred and nine.
   (c) Twenty eight thousand and eight.
   (d) Fifty one thousand and ninety.

1. What number comes after 99?

100 or one hundred in words.

2. What number comes after 999?

1000 one thousand in words.

Exercise 6

Count the first five numbers after 100.

Write the numbers in symbols and words:

101 :……

102 :……

103 :……

104 :……

105 :……

Exercise 7

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, 4

UNIT 2: OPERATIONS ON NUMBERS

Exercise 1

Addition

1) 1 1 2
+ 2 4

2) 4 6 2
+ 6 7 8 5

3) 2 6 5
+ 1 8 7

4) 148
+40,989

Mabior has 123 cows and 115 bulls.

How many cows and bulls does Mabior have?

Number of cows	1 2 3
Number of bulls	+ 1 1 5
Total number of animals	

1. P 3 class has 125 boys and 89 girls. How many students are there in P3?

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. The Ministry of Health has trained 259 men and 416 women on HIV awareness in Rumbek West. How many people are now aware of HIV in Rumbek West?

4. A cattle camp in Wulu is selling milk to a Chinese company. The first day it sold 145 litres of milk. The second day it sold 562 litres. How many litres of milk did the cattle camp sell in the first two days?

Multiplication

617 617 to the nearest hundreds is 600

× 45 45 to the nearest tens is 50

600 × 50 = 30 000. This product has 5 digits.

Therefore, the product of 617and 45 will be a 5 digit number, i.e. 27765

617

× 45

3,085

24,680

27,765 This Product has 5 digits.

1. (i) By rounding off, find the number of digits each product will have,

   (ii) Find the accurate answer for each problem.

Exercise 2

(a) 53 × 17

(b) 72 × 11

(c) 22 × 44

(d) 22 × 15

(e) 78 × 3

(f) 49 × 23

2. Mama Helen can draw 45 pictures per day. How many pictures can she draw in 45 days?

3. A PLEFS class in Awerial has 38 learners. Each learner has a small garden. If each learner planted 15 cabbages in their small gardens, how many cabbages will the learners have in total?

Exercise 3

Division: By multiples of 10

1. (a) 100 ÷ 10 = (b) 120 ÷ 10 = (c) 180 ÷ 10 = (d) 140 ÷ 10 =

2. (a) 800 ÷ 20 = (b) 1200 ÷ 40 = (c) 1080 ÷ 60 (d) 5600 ÷ 80 =

3. Divide 500 books to ten boys and girls in P3. How many books will each get?

4. (a) 100 ÷ 10 = (b) 120 ÷ 10 =
   (c) 180 ÷ 10 = (d) 140 ÷ 10 =
5. Martha planted 370 trees in ten rows. How many trees did she plant in each row?

Exercise 4

Divisibility tests of 6 and 9

1. Which of these numbers are divisible by 2?

   12, 35, 221, 97, 5 0, 1 984, 16, 99, 33, 34.

2. Which of the numbers in question 1 above are divisible by 3?
3. Which of the numbers in question 1 above are divisible by 6?
4. Which of the following numbers are divisible by 9?

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

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

   690, 180, 309, 270, 63.

6. Which of these numbers are multiples of 4?
   442, 268, 16, 1 5, 152.

Prime numbers

1. Write down the divisors for each of the following numbers:

   11, 13, 15, 17, 19, 21, 31, 35, 42,

2. List the prime numbers between 20 and 35.
3. 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

DIVISORS (FACTORS)

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

(a) 6 = 2 x _____
(b) 12 =2 x _____
(c) 24 = 6 x _____
(d) 36 = 4 x _____
(e) 54 = 9 x _____

2. *Express the following as a product of two factors only. The first one has been done for you.*

(a) 12 = (4 x 3)
(b) 18 =_____
(c) 15 =_____
(d) 25 =_____
(e) 27 =_____
(f) 48 =____
(g) 72 =____
(h) 21 =____
(i) 32 =____
(j) 64 =____

PATTERNS

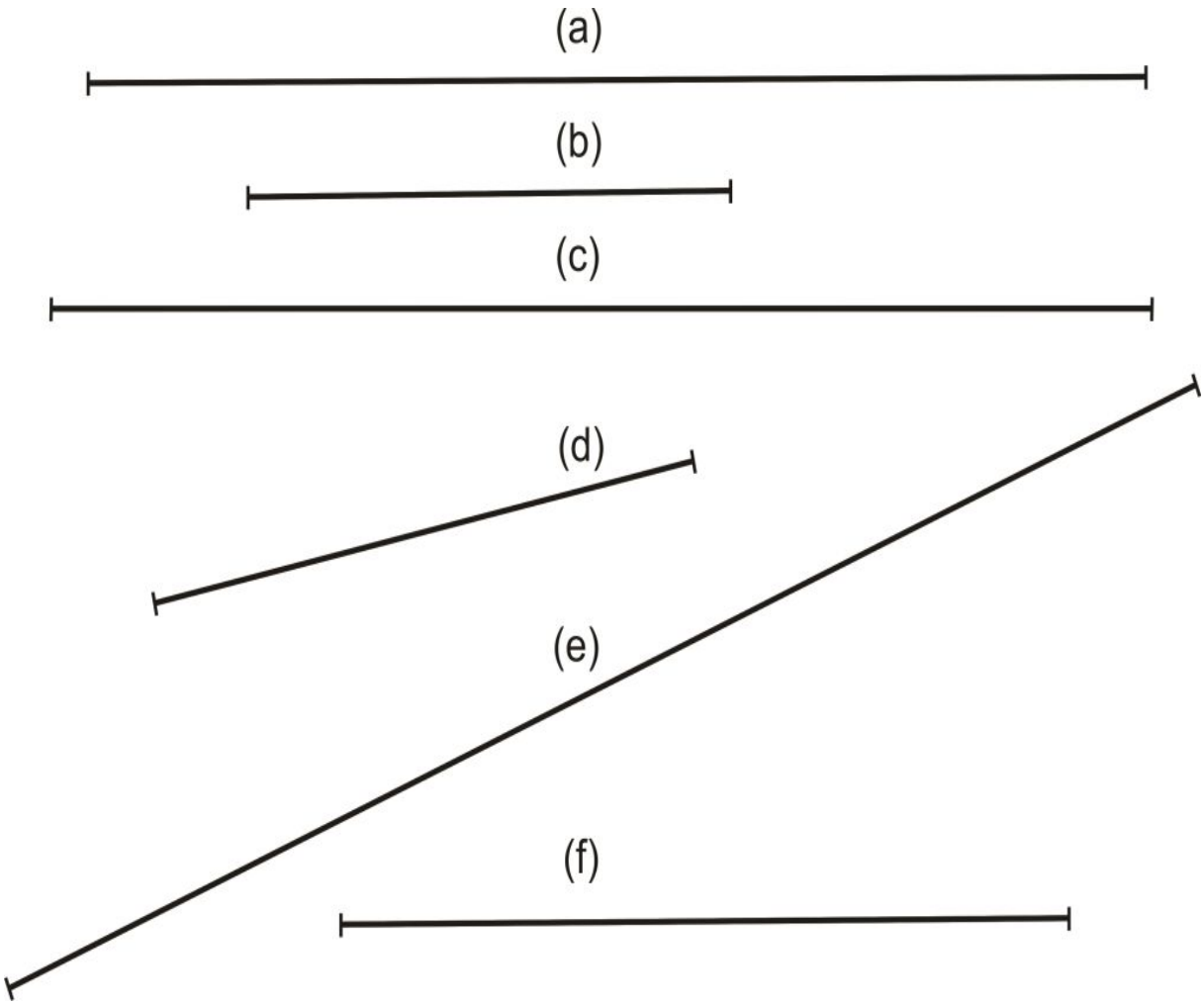
1. Fill in the blanks with the next number in the pattern. Number one has been done for you.

1) 1, 3, 5, 7, 9, 11
2) 5, 9, 13, 17, 21, 25,_____
3) 20, 18, 16, 14,_____
4) 23, 29, 31, 37,_____
5) 0, 2, 4, 6, 8,_____
6) 1, 2, 3, 5, 7, 11,_____

UNIT 3: MEASUREMENTS

LENGTH

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



2. Take a ruler and measure the lengths of the following. Give your answers to the nearest metre or centimetre:
   (a) The lenth of a rope.?
   (b) Your height.
   (c) The height of your friend.
   (d) The distance between one the poles used for tying cows in the cattle camp.

Example 1: Change 475 cm into metres.

100 cm = 1 metre

$$100 \overline{)\,475} \quad 4$$

$$-400$$

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

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

Example 2: Change 5 metres into centimetres,

5m = (5 x 100)cm

= 500 cm

1. Change these measurements into metres. The first one has been done for you.

   (a) 245 cm = **2.45 m** (b) 425 cm (c) 535 cm

   (d) 140 cm (e) 780 cm (f) 340 cm

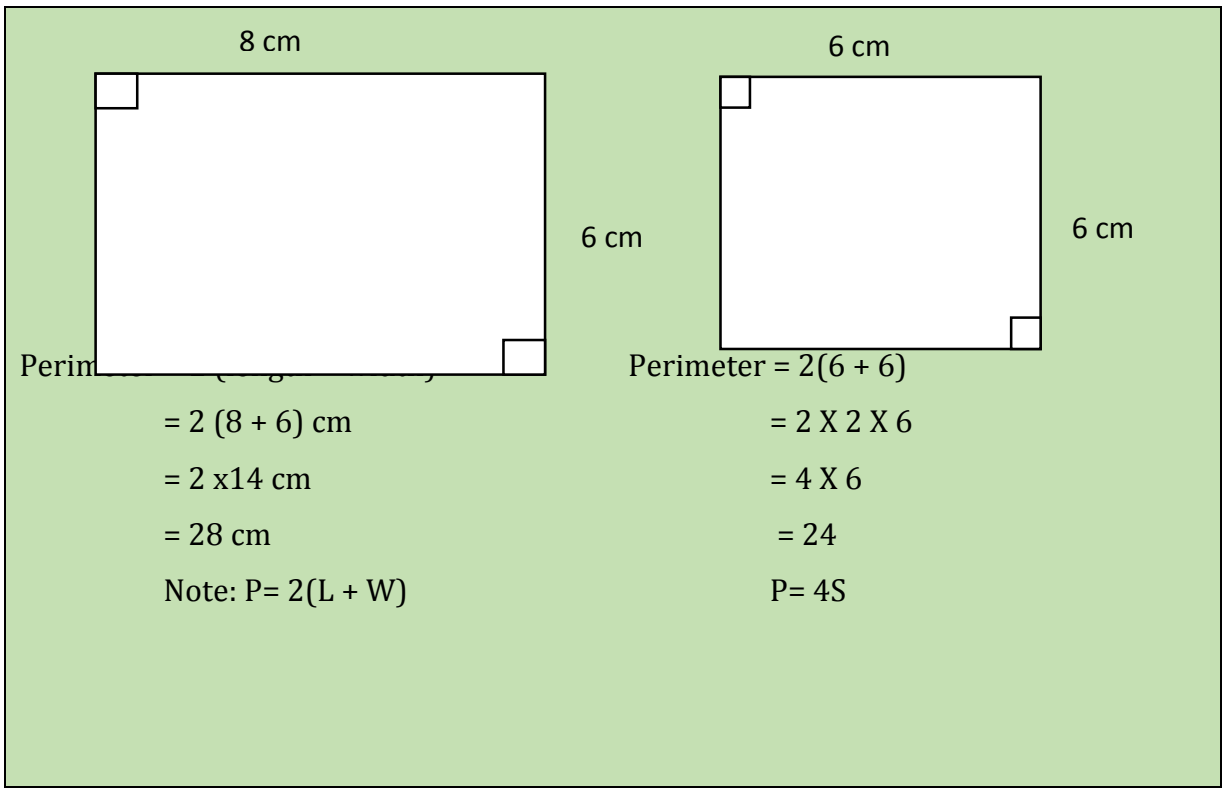
   (g) 2,565 cm (h) 5 010 cm

2. Change these measurements into centimetres:

   (a) 8m (b) 13m (c) 24m

PERIMETER

Perimeter is the distance all the way round a figure.



Perim

= 2 (8 + 6) cm

= 2 x14 cm

= 28 cm

Note: P= 2(L + W)

Perimeter = 2(6 + 6)

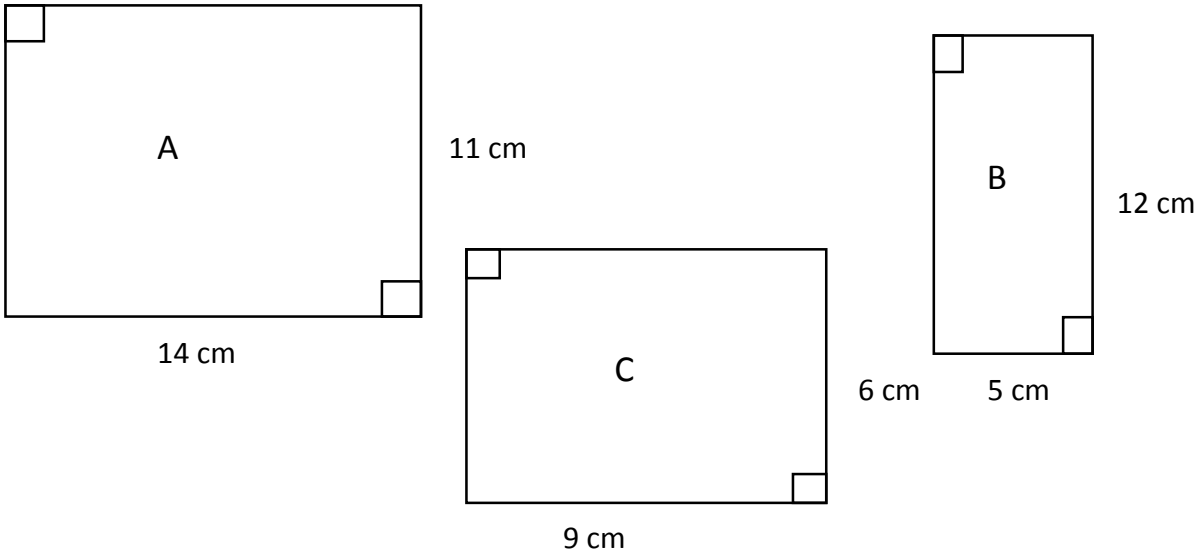
= 2 X 2 X 6

= 4 X 6

= 24

P= 4S

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



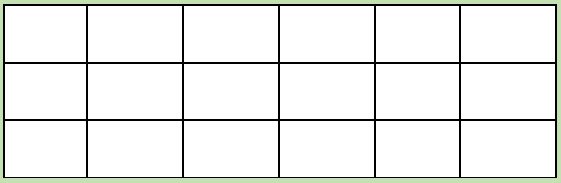
2. Calculate the perimeter of squares whose sides are:

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

AREA

Rectangle

A



Squares along the length are 6

Squares along the width are 3

Area = 6x3 = 18 sq. units

B

Length = 6 cm

Width = 3cm

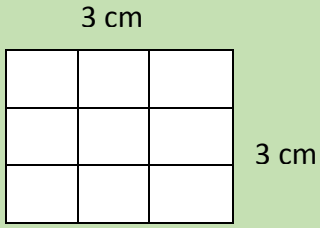
Area = L x W

= 6 cm x 3 cm

= 18cm^2

Square

A



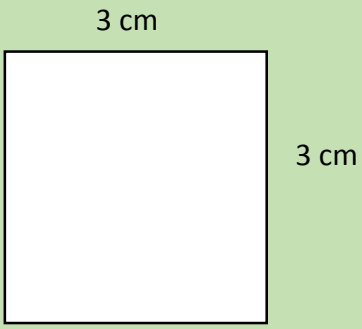
Squares along the side are 3

Squares along the other side are 3

Area = 3 x 3

= 9 sq. units

B



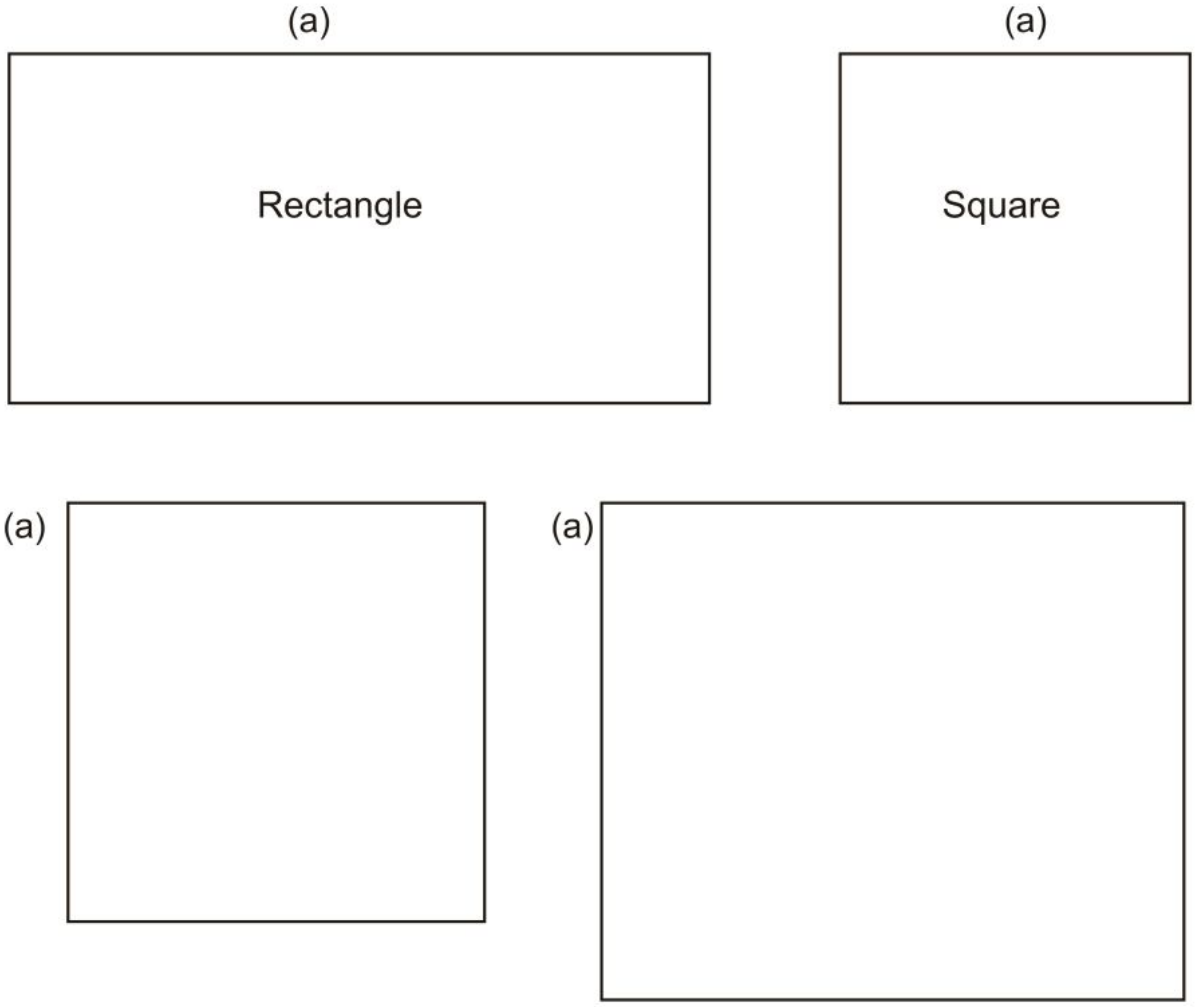
Side is 3 cm

Area = S x S

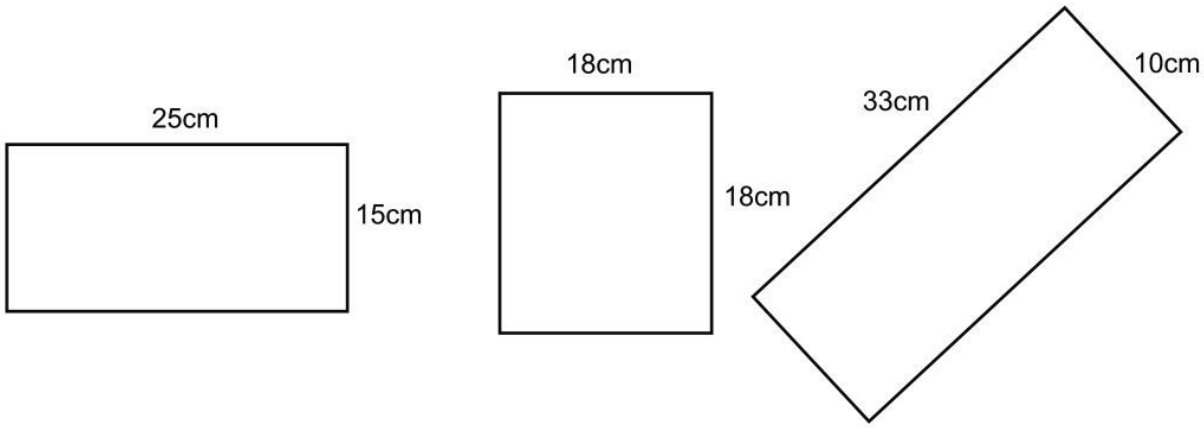
= 3 cm x 3 cm

= 9cm^2

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

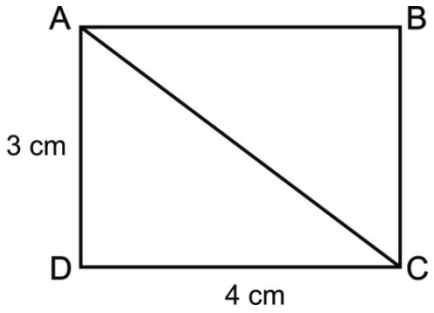


2. Find the area of the following figures in square centimetres (cm^2)



2. ABCD is a rectangle. 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 x 4) cm²*

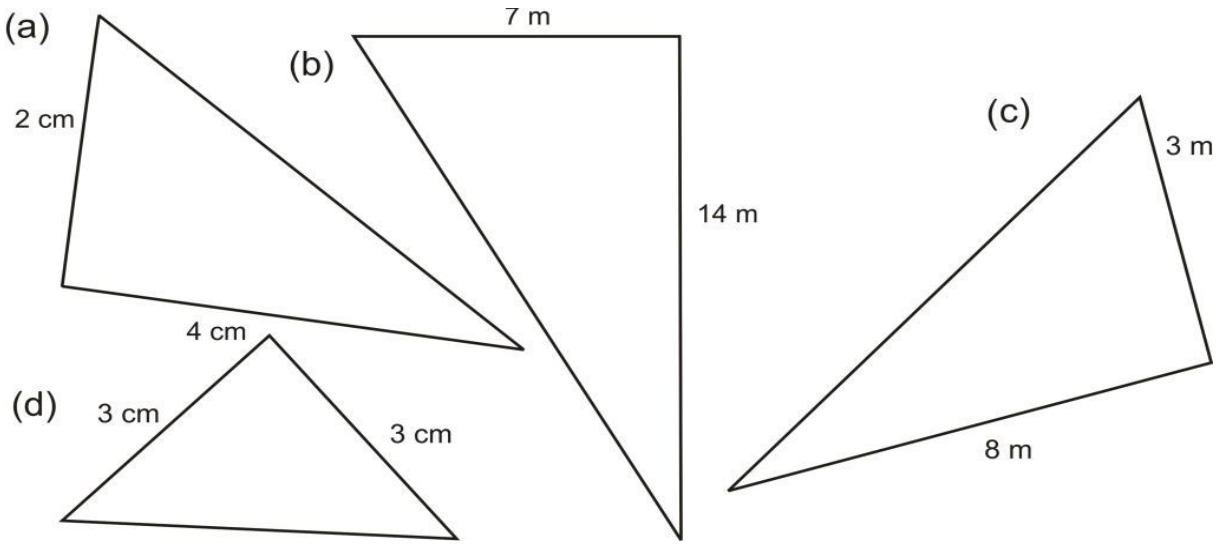
= *12 cm²*

Area of any one triangle = $\frac{1}{2} \times$*(3 x 4) cm²*

= $\frac{1}{2} \times$ *12cm²*

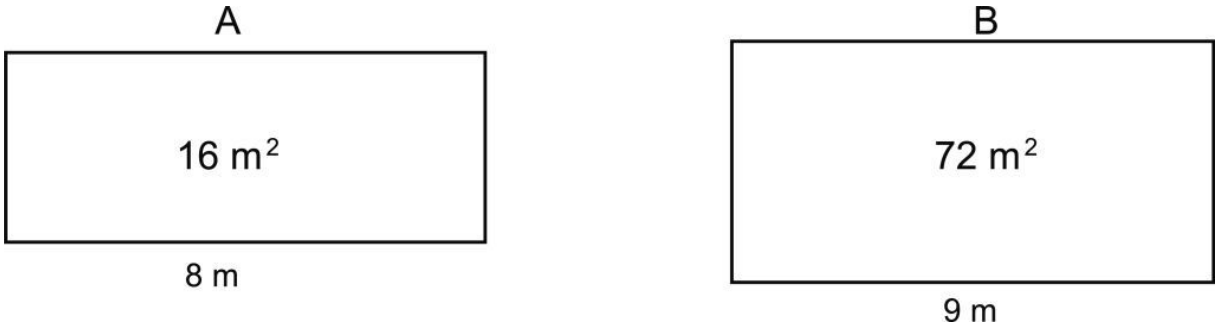
= *6 cm²*

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

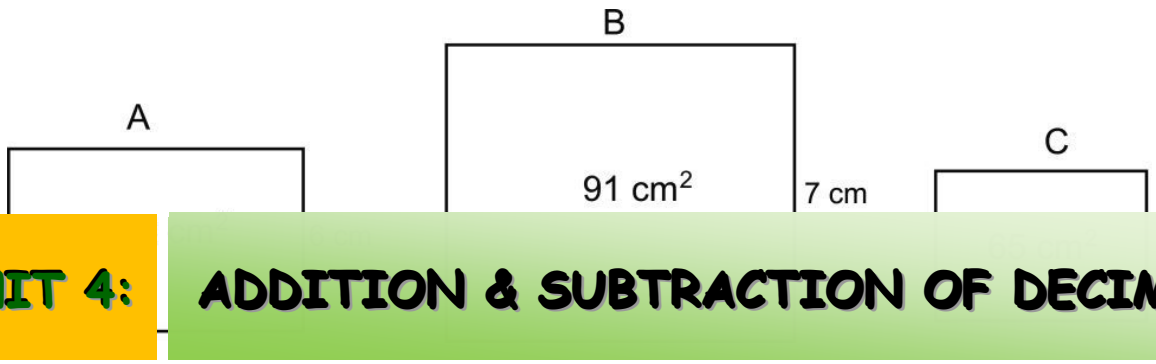


Finding the length or width

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



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



UNIT 4: ADDITION & SUBTRACTION OF DECIMALS

Work out the following:

1.

6.4	8.7	7.2	0.9
+ 0.4	+ 2.5	+ 3.9	+ 2.3
8.6	6.9	4.0	2.1
- 6.7	- 3.5	- 2.5	- 1.2

2.

3.75	7.53	4.89	9.89	6.25
+ 3.91	+ 3.77	+ 3.29	+ 6.29	- 3.27
4.23	3.91	10.8		
- 1.6	- 2.82	- 8.98		

Multiplication

(i) 0.4 x 4 = $\frac{4}{10} \times 4 = \frac{16}{10} = 1.6$	(ii) 70.23 x 14 $\frac{7023}{100} \times 14$ $= \frac{98322}{100}$ = 983.22	(iii) 136 x 0.015 $136 \times \frac{15}{1000}$ $= \frac{2040}{1000}$ = 2.040 or 2.04

1. Express the following decimals as fractions in their simplest forms. The first one has been done for you.

(a) 0.8 is $\frac{4}{5}$ (b) 0.4 (c) 0.15

(d) 0.72 (e) 0.99 (f) 0.1

2. Work out

(a) 0.9 X 3 (b) 1.2 X 4 (c) 3.1 X 3 (d) 0.12 X 6

(e) 0.24X5 (f) 6 x 2.5 (g) 3.3 x 5 (h) 0.18 X 7

(i) 2.14 X 3 (j) 0.23 X 3 (k) 1.11 x 1 (l) 1.20 X 0

CONVERSION FROM DECIMAL TO FRACTIONS

Convert 0.375 into a fraction.

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

1. Write the following as decimals:

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

2. Write down as fractions

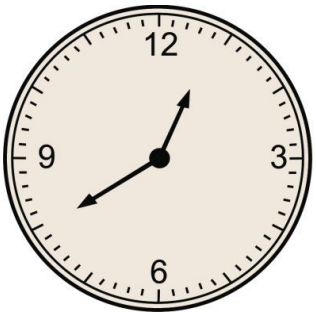
(a) 0.75 (b) 0.075 (c) 0.625 (d) 0.45

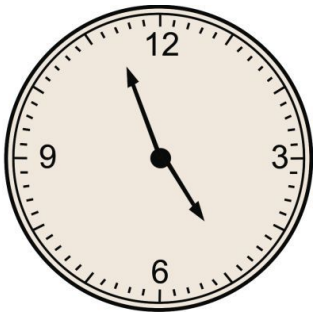
UNIT 5: TELLING TIMES

TIME IN HOURS AND MINUTES

Exercise 1

1. Write down the time shown on each clock face in the long and short forms:





2. Draw clock faces to show:

(a) a quarter past two o'clock

(b) a half past three o'clock

(c) 4:10

(d) 10:45

(e) Twenty five minutes to eleven.

Exercise 2

Time in a.m. and p.m.

1. Write down these times using a.m. and p.m.

(a) Half past 10 in the morning (b) ¼ to 11 at night

(c) 3 o'clock in the afternoon (d) 4 o'clock in the morning

(e) 5 minutes to 12 in the morning (f) 4 o'clock in the afternoon

2. The time now is 8.00 a.m. Copy and complete the following statements:

After 1 hour the time will be 9.00 a.m.

After 2 hours the time will be_____

After 3 hours the time will be _____

After 4 hours the time will be _____

After 5 hours the time will be _____

Exercise 3

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

UNIT 6: REVISION EXERCISE

ADDITION

1.

h	min
3	35
+2	15

2.

H	Min
24	36
+28	17

SUBTRACTION

h	min	s	
			(i) We cannot subtract 30 s from 15 s. We therefore borrow 1 min from 25 min and add to 15s

Example 1

3	40	45
-1	20	30
2	20	15

15 s + 1 min = 15 s + 60 s

=75 s

75 s - 30s = 45s

Record 45 s in the seconds' column.

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

Now 24 min - 15 min

= 9 min

Record 9 min

Example 2

h	min	s
4	25	15
-2	15	30
2	9	45

(iii) 4h-2h=2h, Record 2 h.

Our answer is 2 h 9 min 45 s

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
11	40

1. Multiply minutes: 20 X 5 = 100
2. Convert: 100 min = 1 h 40 min
3. Record 40 min and carry over 1 h
4. Multiply hours: 2x5 = 10
5. Add hours: =10 + 1 = 11 h
6. Record 11 h

2. Multiply 3 min 45 s by 4

h	min

1. Multiply seconds: 45 X 4 = 180 s
2. Convert: 180 s = 3 min 0 s
3. Record 0 s and carry over 3 min
4. Multiply minutes: 3x4=12
5. Add minutes: 12 + 3=15

3	45	6.	Record 15 min.
x	4		
15	0		

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

```
        3 h 15 min
    ┌──────────────
6   │ 19 h   30
    │ 18 h
    │ 1 h = 60 min
    │ ------------
    │    90 min
    │    90 min
    │ ------------
    │       0
```

1. Divide hours: 19÷6 = 3 rem 1
2. Record 3 h
3. Convert 1 h to min = 60 min
4. Add minutes: 30 + 60 = 90
5. Divide minutes: 90 ÷6 = 15
6. Record 15 min

2. Multiply 3 min 45 s by 4

```
        0 min 40 s
    ┌──────────────
7   │ 4 min   40s
    │ 0 min
    │ 4 min =  240
    │ ------------
    │    280 s
    │    280 s
    │ ------------
    │       0
```

1. Divide minutes: 4 ÷ 7 is not possible
2. Convert 4 min to s: 4 x 60 = 240 s
3. Add seconds: 40 + 240 = 280
4. Divide seconds: 280 ÷7 =40
5. Record 40 s

Divide

a) 25 h 20 min ÷ 4 **b)** 4h 15 min ÷ 3

c) 5h 30 min ÷ 6 **d)** 6 min 40 s ÷ 8

e) 12 min 30 s ÷ 5 **f)** 50 min 10 s ÷ 7

UNIT 7: ALGEBRA

Collection and addition of like terms

Simplify

1. 3a + 4a = 7a *2. 8b - 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 =2c

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 =

Work out the following:

1. 2a + 5a = 2. 8a + 3a + 6a =

3. 14x - 12x = 4. 17c - 5c + 2c - 4c =

SOLVING EQUATIONS

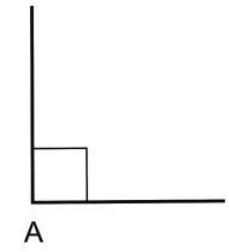
Find the unknown in the following. Number one has been done for you.

1. b + 5 = 18 b=13

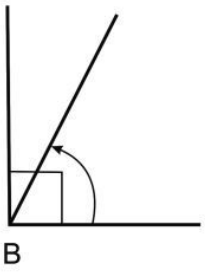
2. a + 9 = 22
3. 12 + k = 31
4. y + 6 = 7
5. q + 18 = 19
6. t + 75 = 100

UNIT 8: GEOMETRY

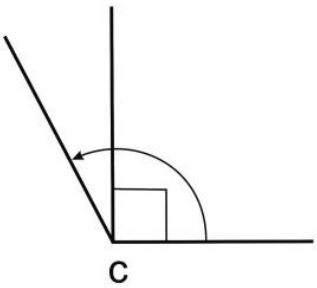
TYPES OF ANGLES



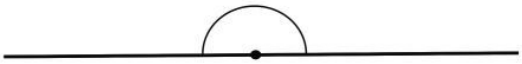
RIGHT ANGLE



ACUTE ANGLE
(Smaller than right angle)



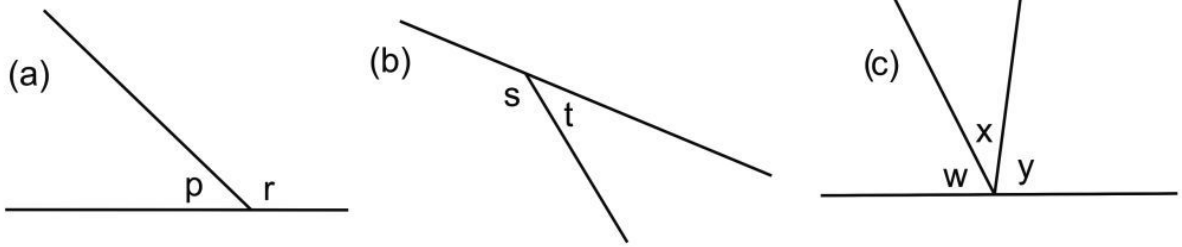
OBTUSE ANGLE
(Bigger than right angle)



STRAIGHT LINE
(2 right angles)

REFLEX ANGLE
(Bigger than 180°)

2. Measure the angles shown in the figures below:



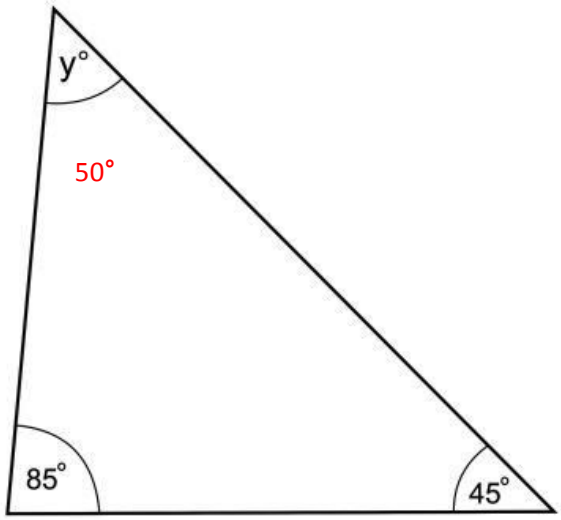
(a) p = (b) s = (c) w =

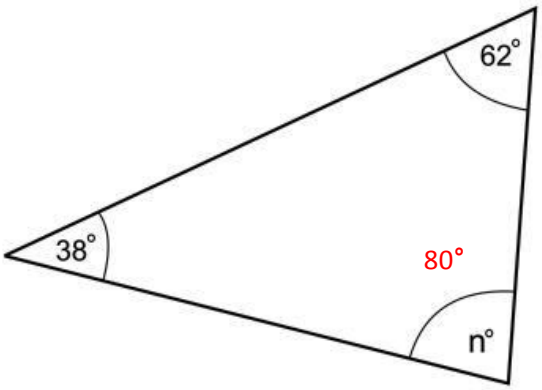
r = t = x =

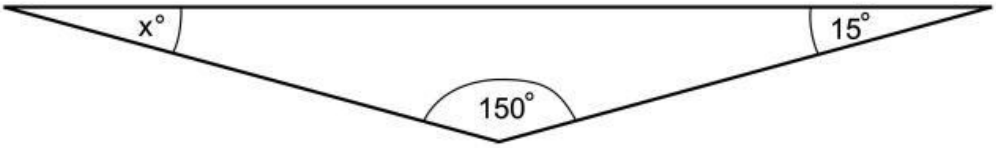
p + r = s + t = y = w + x + y =

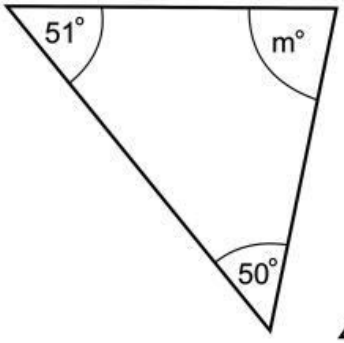
TRIANGLES

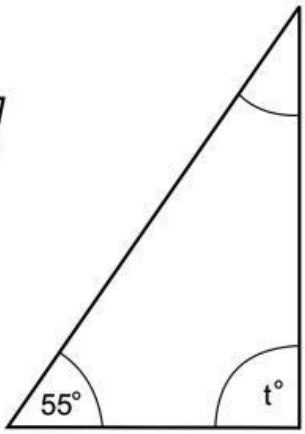
1. Calculate the sizes of the angles marked by small letters:

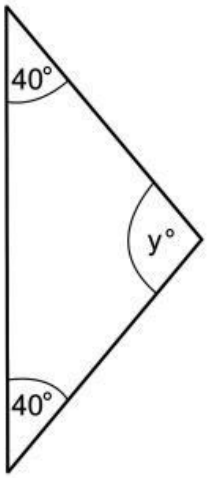












UNIT 9: MASS

Revision

1. How many $^1/_2$ kg packets are there in 5 kg?
2. How many half kilograms are there in 35 kg?
3. Makwach weighs 71 kg. Wul 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 kg = 1000 g

$^1/_2$ kg = 500 g

$^1/_4$ kg = 250 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 g = 1 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 kg = 1000 g

2 kg = (1 000 x 2) g

= 2 000 g

Or Since 1 kg = 1 000 g

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

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

$\frac{3}{4}$kg = 750 g i.e.($\frac{3}{4} \times 1000 = 750$ g) $\therefore 2\frac{3}{4}\text{kg} = 2000\text{g} + 750\text{ g}$ $= 2750\text{ g}$	= 2 750 g

1. Change the following into kilograms. Number one has been done for you.

(a) 500 g 0.5kg (b) 6 000 g (c) 1 000 g (d) 750 g

2. Change the following into grams:

(a) ½ kg (b) 6 kg (c) $^3/_4$ kg

Example 3

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

1 tin weighs 500 g

24 tins weigh (24 X 500) g

(24X500) g = 12 000 g

1 000 g = 1 kg

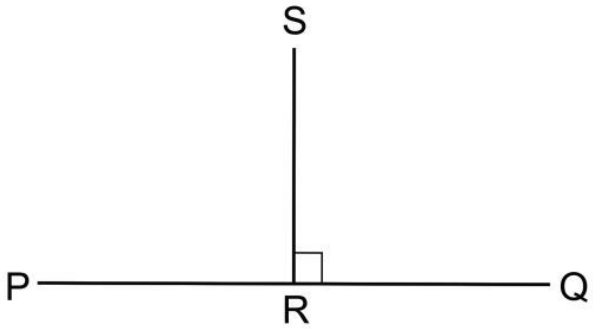
$$\therefore 12\,000\text{ g} = \frac{12000}{1000}\text{kg}$$

= 12 kg

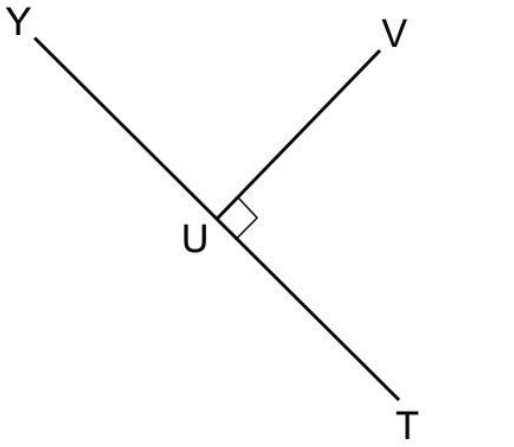
5. There are 200 packets of tea leaves in a carton. Each packet weighs 250 g. What is the total mass of tea leaves in the carton? (Answer in kg.)

UNIT 10: GEOMETRY

Perpendicular lines

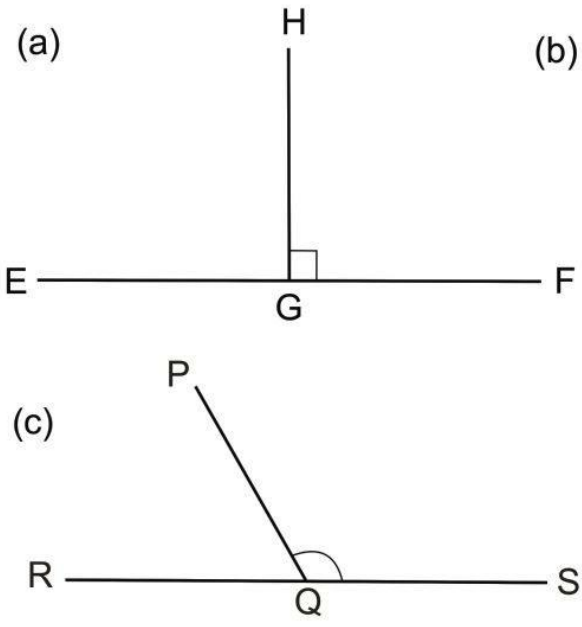


SR is perpendicular to PQ



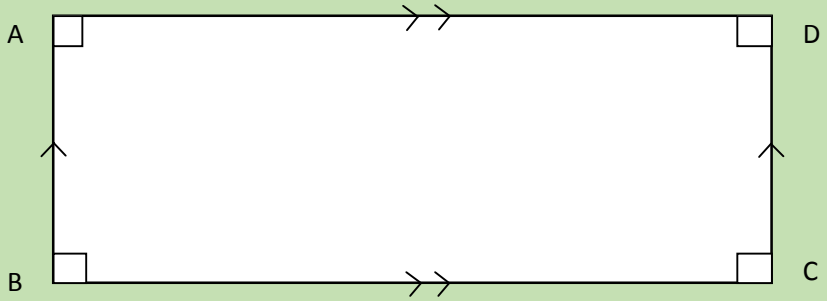
UV is perpendicular to YT

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.



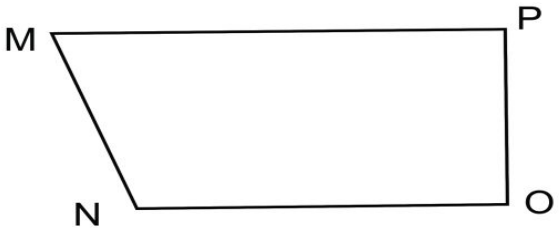
Sides		Angles	
AB =_____cm	CD =_____cm	ABC =_____cm	BCD =_____cm
BC =_____cm	DA =_____cm	CDA =_____cm	DAB =_____cm

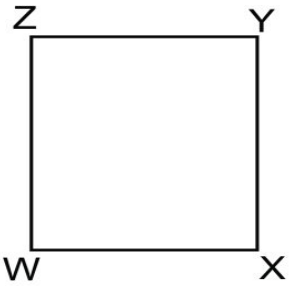
For a rectangle:

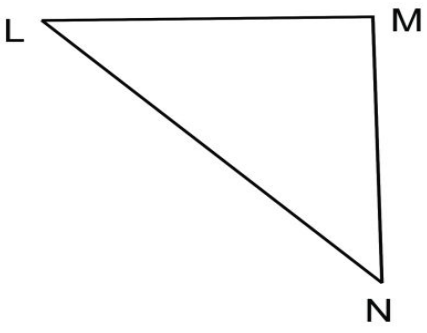
(a) Two opposite sides are equal. (b) All angles are right angles (90°)

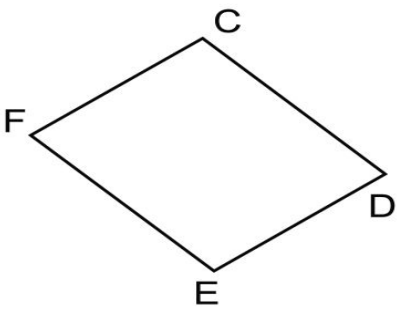
(c) Opposite sides are parallel.

Which of these figures are rectangles?





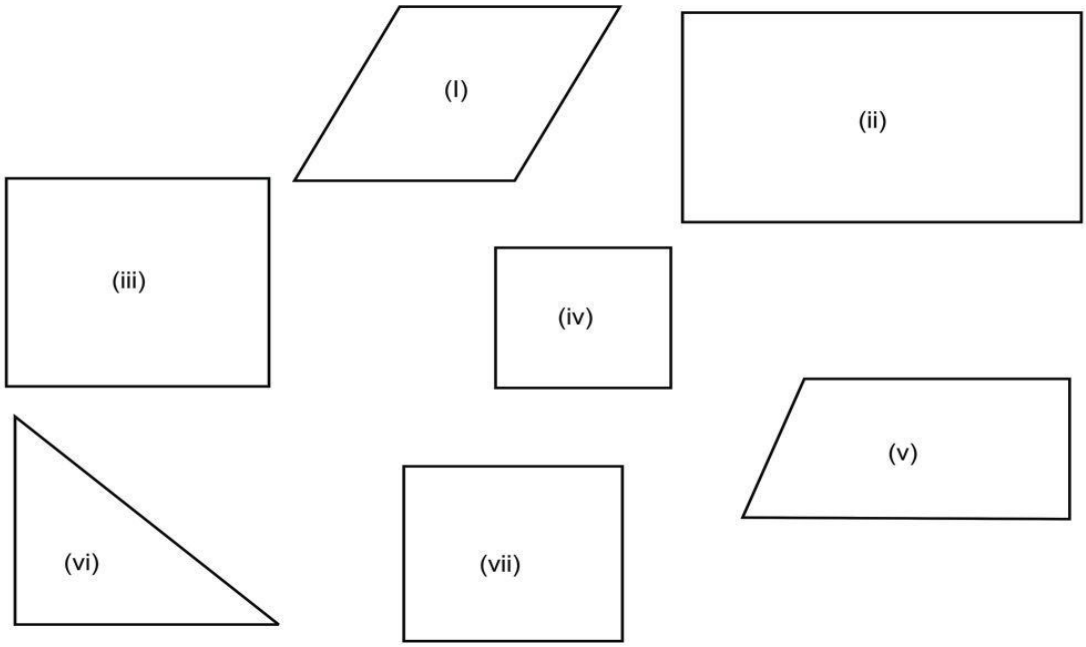




1. Which of these diagrams are:

a) Squares?

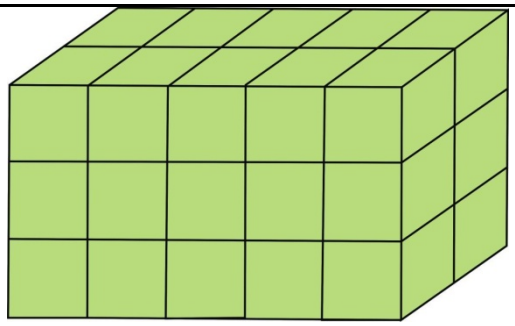
b) Rectangles?



UNIT 11: VOLUME AND CAPACITY

VOLUME

	This is a stack of cubes. How many cubes are in the stack? Each layer has 5 columns and 2 rows. There are 3 such layers.



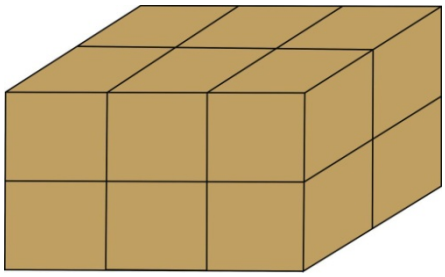
We describe the stack as 5 by 2 by 3

Number of cubes in the stack

=5 x 2 x 3

= 30 cubes

1.



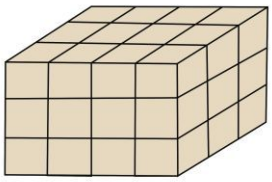
(a) How many layers are there in this stack?

(b) How many cubes are there in each layer?

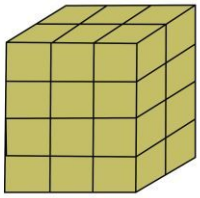
(c) How many cubes are there altogether in the stack?

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

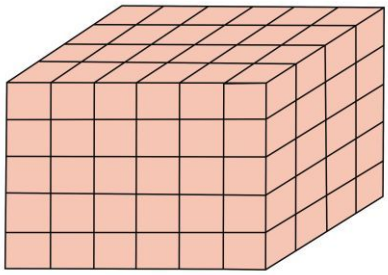
(a)



(b)

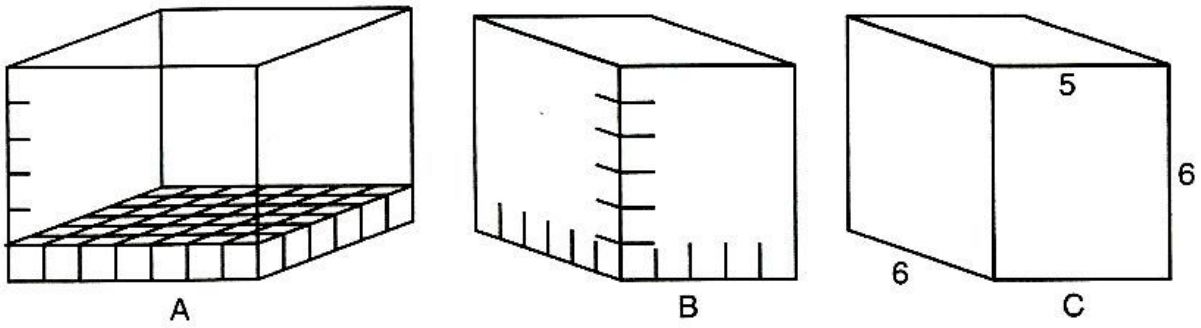


(c)



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:



(a) How many layers will be needed to make each of the blocks A, B and C?

(b) How many rows will be needed to make each layer?

(c) How many columns will be needed to make each layer?

(d) How many cubes will be needed to make each block?

CAPACITY

REVISION

1 Litre = 1 000 millilitres (ml)
$\frac{1}{2}$ Litre = 500 millilitres (ml)
$\frac{1}{4}$ Litre = 250 millilitres (ml)

1. Change the following into milliliters:

(a) 3 litres (b) 4.5 litres (c) $2^{2}/_{8}$ litres