WS 5.1

WORKSHEET 5.1

1.

In triangle ABC , <A=60º ,<B= 30º, Find <C and complete the table below.

<C = ---

AB	BC	AC
10	$5\sqrt{3}$	5
	$4\sqrt{3}$	
	9	
		11
		3.5
6		

2.
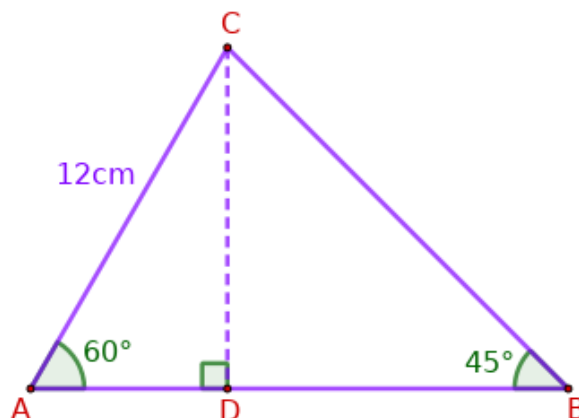
In the figure AC = 12cm , <A = 60º , <B= 45º and line CD is perpendicular to side AB. Find the area and perimeter of triangle ABC

<A= ___   <B = ____

<C = 180 – (____ + ____) = 180 – ____ = ____

<ACB = ____

<ADC = <BDC = ____

<ACD = 180 – (____ + ____) = 180 – ____ = ____

<BCD = 75 – ___ = ____

 In triangle ADC , angles are of measures 30º, 60º and 90º .So sides are in the ratio ___ : ____ : ____

Given AC = ____

AD = ____

CD = ____

In triangle BDC , angles are of measures 45º, 45º and 90º . So sides are in the ratio ___: ____ : ____

CD = ___

BD = ___

BC = ___ x ____ = _____

AB = ____ + ____ = ____ + ____

Area of triangle $= \frac{1}{2}$ bh

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

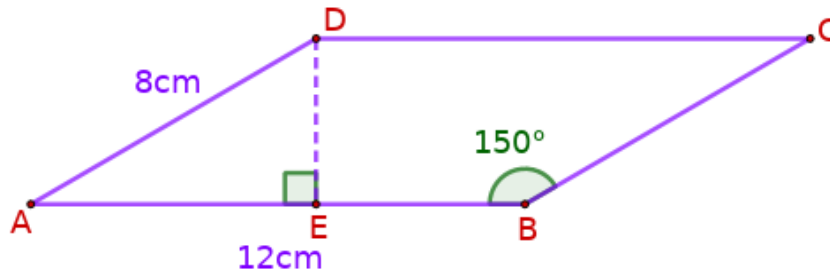$= \frac{1}{2}$ x 6 (____ + ____) x ____

= 3 x ---- x ------

$$= \text{------} + \text{-----}$$

Perimeter $= AB + BC + AC$

$$= \text{-------} + \text{-------} + \text{------}$$

$$= \text{-------} + \text{-------} + \text{------}$$

3.

In parallelogram ABCD , AB = 12 cm , AD = 8 cm and <B = 150º

a) What is the measure of <A ?

b) What is the perpendicular distance from D to AB ?

c) What is the area of the parallelogram ?

   a) <A = 180 – <B = ___

   b) The angles of △ AED are 30º, 60º and 90º . So sides are in the

      ratio ___ : ____ : ____

      So DE = ------

   c) Area of the parallelogram = bh

                        = AB x DE

                        = ----- X ----- = --------

4.

In the figure , <B = 70⁰ , <C = 40⁰ and BC = 9.4 cm

    a) What is the measure of <A ?

    b) What is the diameter of the circle ?

    c) Find the length of AB and AC

    a) <A = 180 – (----- + -----)
         = 180 – ------ = ------

    b) △ABC is -----------

    Given BC = ------- . So , AC = -------- (reason)

    BC = 2r SinA

    ----- = 2r Sin----

    2r = $\frac{-\,-\,-\,-}{-\,-\,-\,-}$

  From trigonometric tables the value of Sin70 = 0.94

  2r = $\frac{-\,-\,-\,-}{-\,-\,-\,-}$ = ----

  Therefore , Diameter = ---

  c) AB = 2r Sin----
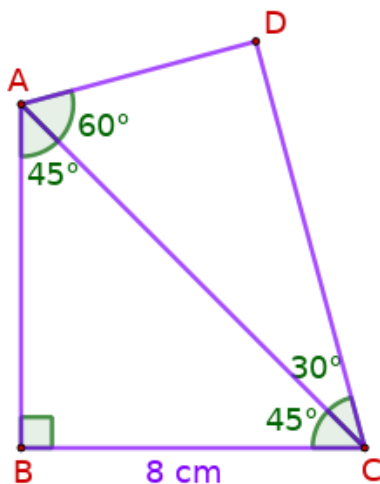
        = ----

5.

In the figure , BC = 8cm , <B = <D = 90º , <ACB = 45º , <CAD = 60º

a) Find <BAC

b) Find the length of AC

c) Find the area of △ABC

d) What is the perimeter of quadrilateral ABCD

a) <BAC = ----

b) The angles of △ABC are 45º, 45º and 90º . So sides are in the ratio

___ : ____ : ____

BC = ---- (given) ,   AB = ----   ,   AC = ----

c) Area of △ABC = $\frac{1}{2}bh$ = ----

d) <ACD = -----

The angles of △ ACD are 30º, 60º and 90º . So sides are in the ratio

___ : ____ : ____

AC = ------

AD = ------

CD = ------

Perimeter of quadrilateral ABCD = AB + BC + CD + AD

= ------- + ------- +------- + -------

TRIGONOMETRY

WORKSHEET 5.1

1.
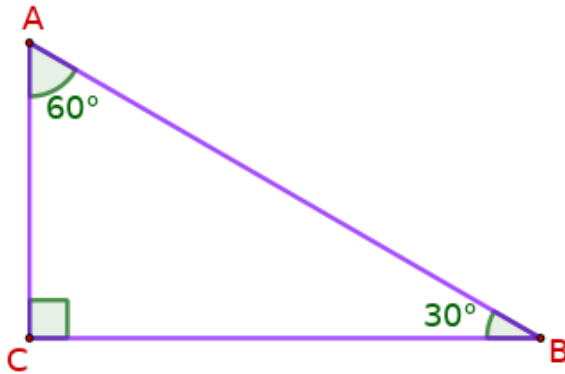
In triangle ABC , <A=60º ,<B= 30º, Find <C and complete the table below.

<C = 90º

AB	BC	AC
10	$5\sqrt{3}$	5
8	$4\sqrt{3}$	4
$6\sqrt{3}$	9	$3\sqrt{3}$
22	$11\sqrt{3}$	11
7	$3.5\sqrt{3}$	3.5
6	$3\sqrt{3}$	3

2.
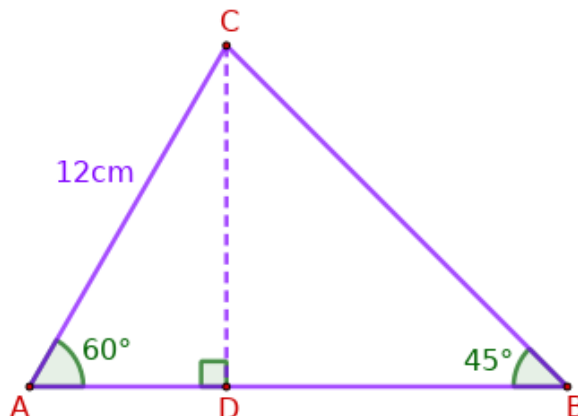
In the figure AC = 12cm , <A = 60º , <B= 45º and line CD is perpendicular to side AB. Find the area and perimeter of triangle ABC

<A= 60º   <B = 45º

<C = 180 – (60 + 45) = 180 – 105 = 75º

<ACB = 75º

<ADC = <BDC = 90º

<ACD = 180 – (60 + 90) = 180 – 150 = 30º

<BCD = 75 – 30 = 45º

In triangle ADC , angles are of measures 30º, 60º and 90º .So sides are in the ratio $1 : \sqrt{3} : 2$

Given AC = 12 cm

AD = 6 cm

CD = $6\sqrt{3}$ cm

In triangle BDC , angles are of measures 45º, 45º and 90º . So sides are in the ratio $1 : 1 : \sqrt{2}$

CD = $6\sqrt{3}$ cm

BD = $6\sqrt{3}$ cm

BC = $6\sqrt{3}$ x $\sqrt{2}$ = $6\sqrt{6}$

AB = AD + BD = $6 + 6\sqrt{3}$

Area of triangle $= \frac{1}{2}$ bh

$= \frac{1}{2}$ x AB x CD

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

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

$$= 3 (1 + \sqrt{3}) \times 6\sqrt{3}$$
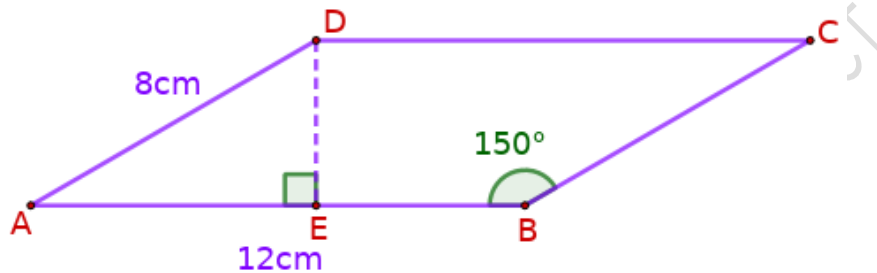
$$= 18 \sqrt{3} + 54$$

Perimeter $= AB + BC + AC$

$$= 6 + 6\sqrt{3} + 6\sqrt{6} + 12$$

$$= 18 + 6\sqrt{3} + 6\sqrt{6}$$

3.

In parallelogram ABCD , AB = 12 cm , AD = 8 cm and <B = 150°

a) What is the measure of <A ?

b) What is the perpendicular distance from D to AB ?

c) What is the area of the parallelogram ?

  a) <A = 180 – <B = 180 – 150 = **30**

  b) The angles of △ AED are 30°, 60° and 90° . So sides are in the

    ratio **1 : $\sqrt{3}$: 2**

  So DE = **4**

 c) Area of the parallelogram = bh

$$= AB \times DE$$

$$= \underline{\mathbf{12 \times 4}} = \underline{\mathbf{48}}$$

4.
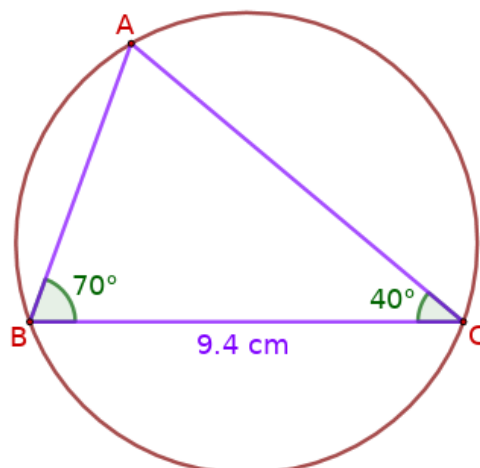
In the figure , <B = 70º , <C = 40º and BC = 9.4 cm

  a) What is the measure of <A ?

  b) What is the diameter of the circle ?

  c) Find the length of AB and AC

  a) <A = 180 – (70 + 40)

  = 180 – 110 = 70º

  b) △ABC is isosceles

  Given BC = 9.4 cm . So , AC = 9.4 cm (sides opposite to equal angles

are equal)

  BC = 2r SinA

  9.4 = 2r Sin 70

  $2r = \dfrac{9.4}{Sin70}$
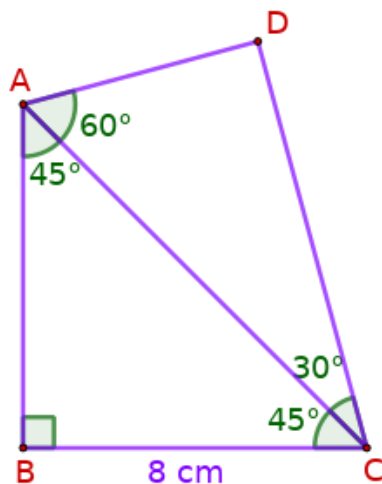
  From trigonometric tables the value of Sin70 = 0.94

  $2r = \dfrac{9.4}{0.94} = 10$

  Therefore , Diameter = 10 cm

  c) AB = 2r Sin C

  = 10 x 0.64 = 6.4 cm

5.

In the figure , BC = 8cm , <B = <D = 90º , <ACB = 45º , <CAD = 60º

a) Find <BAC

b) Find the length of AC

c) Find the area of $\triangle$ABC

d) What is the perimeter of quadrilateral ABCD

a) <BAC = **45º**

b) The angles of $\triangle$ABC are 45º, 45º and 90º . So sides are in the ratio

1 : 1 : $\sqrt{2}$

BC = **8** (given) , AB = **8** , AC = **8** $\sqrt{2}$

c) Area of $\triangle$ABC = $\frac{1}{2}bh$ = $\frac{1}{2}$ X 8 X 8 = **32**

d) <ACD = **30º**

The angles of $\triangle$ ACD are 30º, 60º and 90º . So sides are in the ratio

1 : $\sqrt{3}$ **: 2**

AC = **8** $\sqrt{2}$

AD = **4**$\sqrt{2}$

CD = $\sqrt{3}$ X4$\sqrt{2}$ = **4** $\sqrt{6}$

Perimeter of quadrilateral ABCD = AB + BC + CD + AD

= 8 + 8 + 4 $\sqrt{6}$ + 4 $\sqrt{2}$

= 16 + 4 $\sqrt{6}$+ 4 $\sqrt{2}$