"Thurstan College, being unshaken amidst the COVID 19 challenges"

Series of Supportive Activities

Grade 8 - Mathematics

THURSTAN COLLEGE

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Thurstan College, being unshaken amidst the COVID 19 challenges

Series of Supportive Activities

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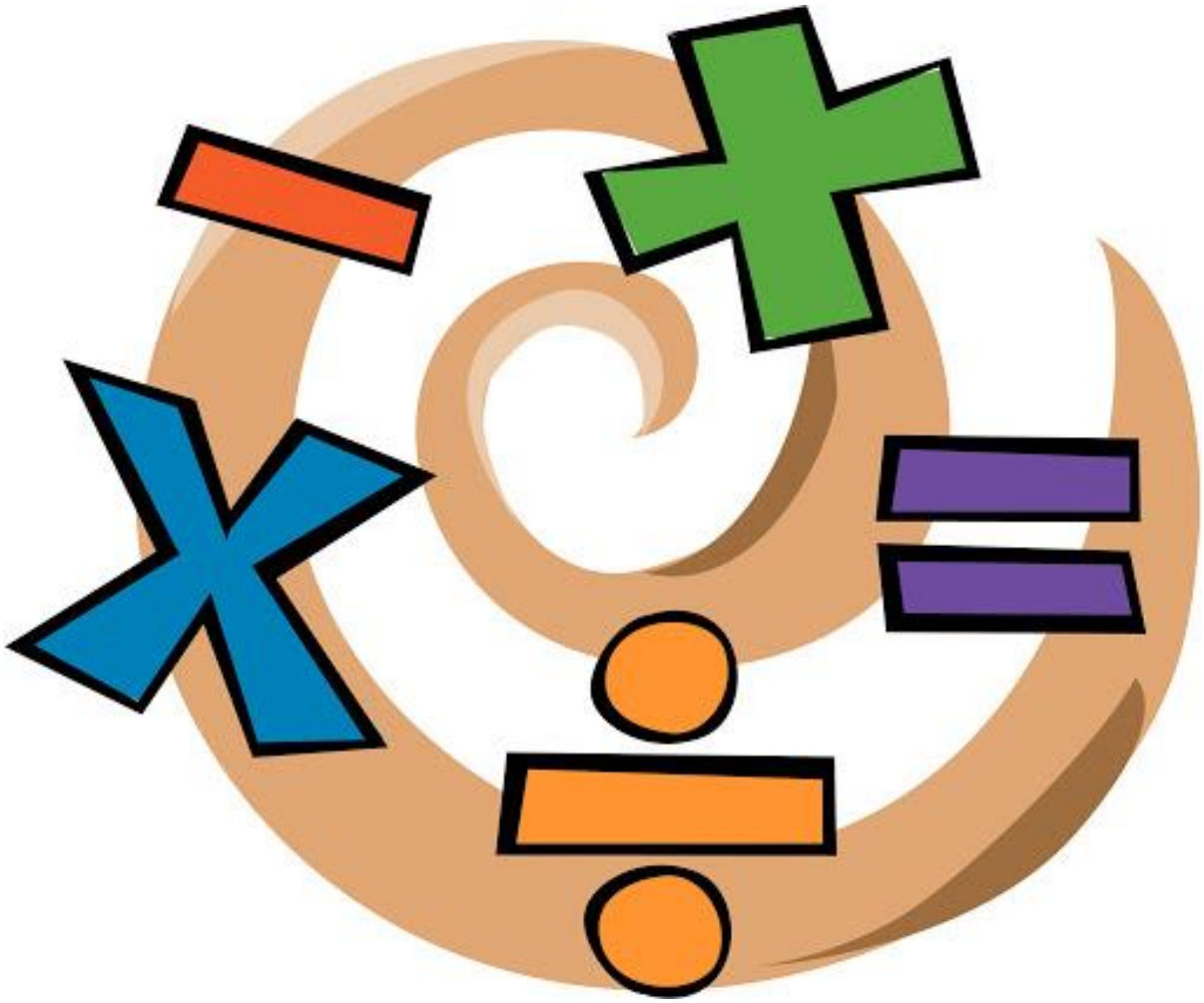
Thurstan College

MATHEMATICS

Activity Book

Grade 8



Number Pattern

1.Write the next two terms of the following number patterns.

4 , 9 , 14 , 19 ,…… , …….

3, 7 , 11 , 15 , ……. ,……

2.What is the fifteenth triangular number ?

3.(i) What is the sum of eighth square number and sixth square number ?

(ii) Which square number is it ?

4. Write three triangular numbers which are odd numbers.

5. i) Write the general term of the following number sequence.

1 , 3 , 5 , 7, ….

ii) Find the twentieth term of above sequence.

6.Write first four terms of the given general term of the sequence.

4n – 2

7. Which square number is 64 ?

8. In the number pattern 1 , 4 , 9 , 16 ,….

(i) Find the general term of the number pattern ?

(ii) What is the thirtieth term of the number pattern?

9. What is the thirtieth term of the triangular number pattern starting from 1 and written in ascending order?

10. In the pattern of the even numbers starting from 1 and written in ascending order ,
(I) What is the tenth term ?

(ii) what is the fifteenth term ?

(iii) Which term is 54 ?

11. In the pattern of the odd numbers starting from 1 and written in ascending order
(i) what is the eighteenth term ?

(ii) What is the fiftieth term ?

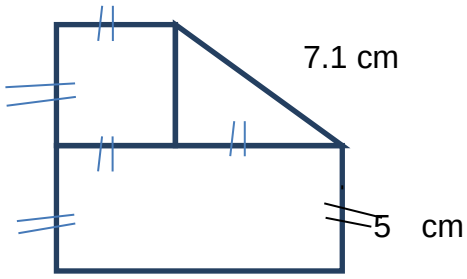
.

(iii) Which term is 119?

Perimeter

1.Find the side length of a cube with the perimeter of a face 24 cm

2.Find the perimeter of the figure.



3.Length of a rectangle is 20 cm and breadth is 10 cm . Find the length of a side of a square having the same perimeter as that of the rectangle mentioned above.

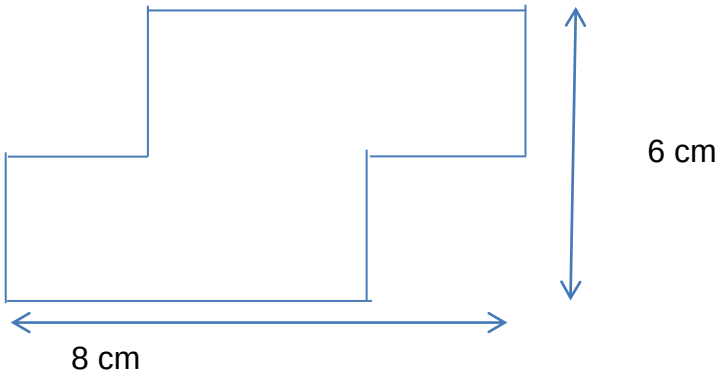
4.The length of a rectangular land is 4 cm more than its breadth.

(i) If the breadth is x cm . write the expression of the length.

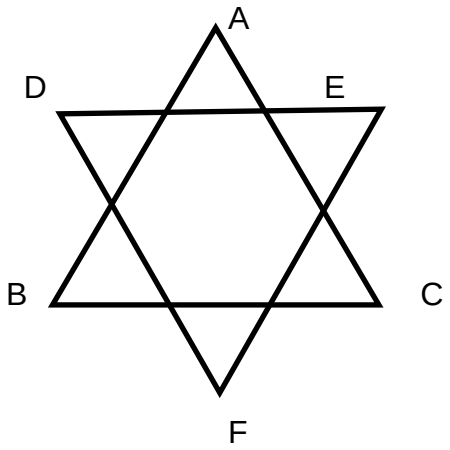
(ii) Write the expression of the perimeter .

(iii) If the perimeter is 48 cm , find its length and breadth.

5.Find the perimeter



6. Here is a sketch built with two equilateral triangles of similar size ABC and DEF .Length of aside of it is 12 cm. All small triangles in the sketch are similar in both size and shape.

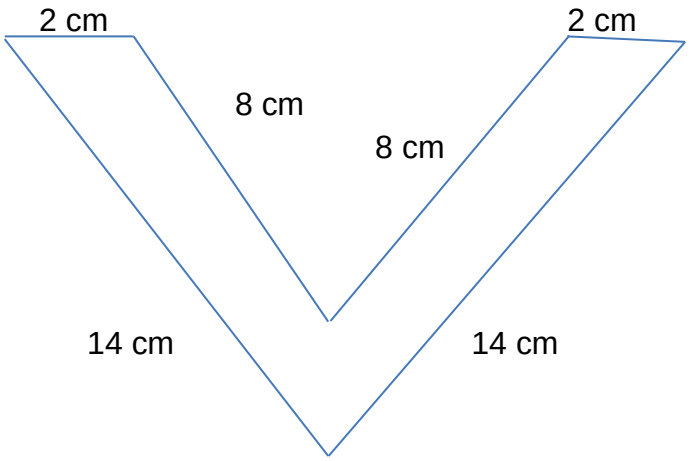


7.(i) Find out the total distance a kid ran in a rectangular shape land with the length of 100m and breadth 5o m.

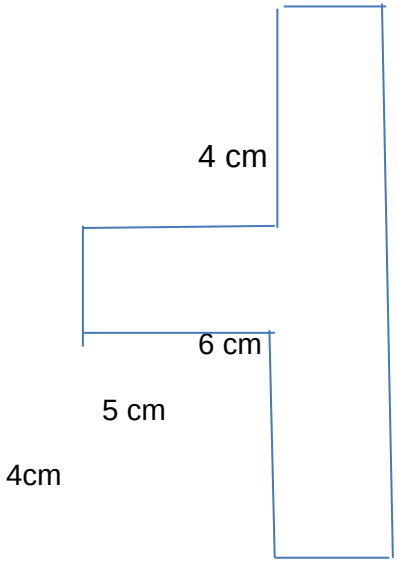
(ii)Find out the length in meters in order to put barbed wires around the land in 4 times.

(iii) If you need Rs. 5000 for putting up one round of barbered wire around the land , Find the total amount needed to put up four rounds of wire around the land.

8. Find the perimeter of the following figures.



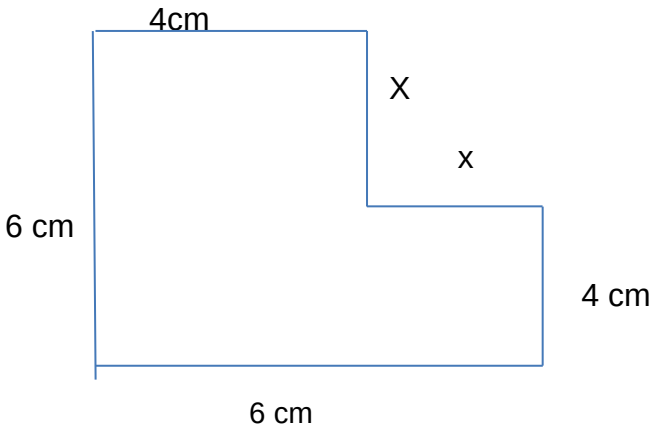

3 cm
6 cm


4 cm
6 cm
5 cm
4cm
6cm

9.(i)If a side of an equilateral triangle is 12cm.Find its perimeter.

(ii)Find the length of a side of a square having the same perimeter as that of the triangle mentioned above.

10



Find the value of “x”

Indices

1. Find the value of

$(-2)^3$

$(-2)^6$

2^4

3^4

4^3

5^3

2.Find the value of $2y^2 + 3$ if $y=3$

3.Find the value of

2×3^2

$(-2)^3 \times (-3)^2$

$3^2 \times 5^2$

4.Express each of the following as a product of powers of the factors

$(3 \text{ X } 8)^2$

$(2 \text{ X } 5)^3$

$(3 \text{ X } a)^2$

$(m \text{ X } n)^3$

$(3 \text{ X } a \text{ X } b)^4$

$(3 \text{ h })^2$

$(2y)^3$

$(4ab)^2$

$(3m)^4$

5.Express each of the following as a power of a product

$3^2 \times 8^2$

$2^3 \times 3^3 \times 5^3$

$4^3 \times b^3 \times y^3$

$b^2 \times d^2$

$m^3 \times n^3 \times p^3$

6.Simplify

$(4p)^3 \times (2b)^3$

$(2m)^2 \times (5b)^2$

$4^3 \times b^3 \times y^3$

$(-2a)^3 \times (3b)^3$

$(-4p)^2 \times (-2q)^3$

7. Find the value.

$(-1)^2$

1^0

$(-1)^{55}$

1^{2021}

$4 \times (-1)^{1999}$

Algebraic Expressions

1.If a= 2 and b = -2 find the values of following expressions

(i) 2a – b (ii) 3 (a-2b)

(iv) 3ab- 5b (iv) $\frac{2(3ab)}{4b}$

2. If m= -5 , n=- 3 find the values of the following

(ii) -3m +2n (ii) m- n

3.If a= -2 , b=- 4 find the vales of the following

(i) $\frac{2a}{5ab}$ (ii) 3a+5b

(iii)3a –4b (iv) a+2b-5a

4.Simplify

8h + 7 h + 5 h 9m + 3m – 4m

2a – 3a + 6a -5b + b + 7b

5.Remove the brackets and simplify

3(m + n) -2 (2 (m-n)

5(a +b -2) +3 (a – 2b +4)

4(2a-3b) – 2 (3a-4b)

a(3a+2) –(a-3)

2(x+3)-$x(2-x)$

3(a +2b + c)

a (m –n – y)

2a(3a -4b + 5c)

a(6b + 2d – e)

2(2m + 3n – 1)

4 (a + 2b – c) – 2 (2a + b)

3(a – 2b – 1)

2t (2m – 3 n)

6. When a =- 2 Find the values of the following expressions

2(3a – 1)

(a + 5) – (a-3)

3(2a-5) -4(a-2)

3a+ 2a -1

4(2a – 5) + 3

Solids

1.How many vertices , edges , and faces are there ina regular tetrahedron

2.Write the Euler’s relation

3.Write down the geometrical shape of the faces of each solid given below

Regular Octahedron

Regular Dodecahedron

Regular Icosahedron

Regular tetrahedron

Cube

4.State whether Euler’s relation tally or not , using a table for

Cube

Tetrahedron

Regular octahedron

Regular Dodecahedron

Regular Icosahedron

5.What are platonic solids ?

6.Write 5 solids which are named as Platonic solids

Directed numbers

1.Find the value using the number line

(+2)- (-3) =

(-4) + (+3) =

(+3) - (-6) =

(-1) + (-4) =

(-3) – (-5) =

(-4) - (-2) =

(-5) – (-2) =

2.Find the value.

(-4.5) - (-5.3) =

(+16) ÷ (+14) =

$\frac{(-5) \times (-4)}{(-2) \times (-2)}$ =

(+18)÷ (-3) =

(-24) ÷ (-6) =

(+36) ÷ (-9) =

(-7) - (+3) =

(-9) - (-4) =

(+12) - (+4) =

(+10) - (-6) =

(+8) X (+3) =

(+11) X (-7) =

(-9) X (-8) =

(-10) X (+12) =

(+5) – (-12) =

(-40)÷(-5) =

(-8) × (+7) × 0 =

(-8) + (-3) =

(+15) - (-2) =

(-6) – (+4) =

Mass

1..Simplify

(i) 3 t 407kg + 12t 823 kg + 5 t 84 kg =

(ii)91 t 102 kg – 19 t 235 kg =

2.The weight of a lorry is 3t 500kg. 100 cardboard boxes each of weight 350 g is put into lorry. Each box contain 500 packets of tea each weighting 1 kg.

(i)Find the weight of tea

(ii)Find the weight of the cardboard boxes

(iii)Find the weight of the boxes filled with tea.

(iv)The Lorries are weighed when they leave the factory with tea.

3. There are 50t of rice in a warehouse. They are in bags of 10 kgs. 100 bags of rice are taken in one trip of a vehicle.

(i)How many kilograms of rice are there in the warehouse?

(ii)How many bags of rice are there in the warehouse?

(iii)In how many trips did the van take the bags of rice?

4.Write the following weights in metric tons

(i) 35000 kg

(ii) 6500kg

(iii) 10350 kg

(iv) 9006kg

5.Evaluate

(i)5 t 340 kg × 12

(ii)12 t 45 kg × 6

iii)34t 220kg ÷ 20

(iv) 7 t 56kg ÷ 4

6.A signboard near an old bridge indicates that the maximum load which the bridge can support is 8 t. A lorry of mass 5.5t is loaded with 80 bags of cement of mass 50 kg each.

(i)Calculate and show that it is dangerous for the lorry loaded with the bags of cement to cross the bridge.

(ii) What is the minimum number of bags of cement that should be removed for the lorry to safely cross the bridge?

7.The weight of 1 liter of fruit juice is 1 kilograme.A vessel is filled with 10 liters of fruit juice .100 vessels full of fruit juice is taken in a lorry.

(i) Find the weight of 1 vessel

(ii) Find the weight of vessels filled with juice taken in the lorry.

8.Five lorries are used 4 times a day to distribute cement .A lorry takes 100 bags of cement each of weight 50 kg in one trip.

(i)Find the weight of the cement taken in one lorry.

(ii)Find the weight of the cement taken in 5 lorries

(iii)Find the weight of the cement distributed in a day.

9.Fill in the blanks.

3t =……kg

3800 kg = ……t ……kg

8.09 t = ……kg

15634kg = ……t

54 t 84 kg = ……kg

52.003t = ……kg

6.897t = ……kg

4500 kg =……..kg

237694 kg = ……kg

5.025kg =……...kg

70t = ……kg

35.4 t = ……..kg

0.25t = ……..kg

0.004t = ……...kg

10.Simplify

22 t 67 kg + 3t 874kg

34 t 40 kg - 17 t 780kg

24 t 875 kg × 6

82 t 522kg ÷ 7

16 t 200kg ÷ 9

5 t 120 kg × 12

Square Root

1.225 = 3 × 3 × 5 ×5 ,find the value of $\sqrt{225}$

2.Find the value

$\sqrt{144}$

$\sqrt{x^2}$

$\sqrt{64y^2}$

$\sqrt{81m^4}$

$\sqrt{49}$ X $\sqrt{100}$

$\sqrt{5^2}$ X $\sqrt{3^2}$

$\sqrt{8^2}$ X $\sqrt{a^2}$ X $\sqrt{b^2}$

$\sqrt{625}$

$\sqrt{441}$

$\sqrt{10000}$

$\sqrt{8100}$

$\sqrt{400a^2}$

$\sqrt{484y^2}$

$\sqrt{324}$

$\sqrt{196}$

$\sqrt{4900}$

$\sqrt{1600}$

$\sqrt{144}$

Angles

1.Fill in the blanks

(i) The sum of two complementary angles is …….

(ii)The sum of 2 supplementary angles is …….

(iii)Two vertically opposite angles are ……..

(iv)The sum of the angles at a point is …….

2. Find ,

(i) The complement of 41^0 ……..

(ii)The supplement of 41^0 ……

(iii)The complement of 52^0 …….

(iv)The supplement of 52^0 ……..

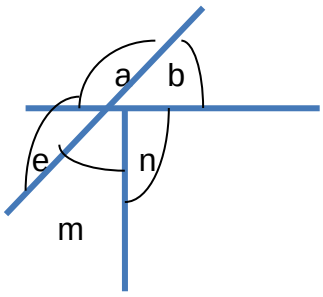
(v)The complement of 75^0 ……

(vi)The supplement of 75^0 …….

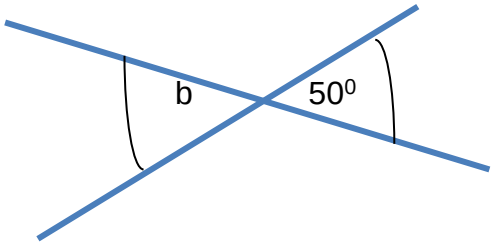
(vii) The supplement of 20° …….

(viii)The complement of 20° …….

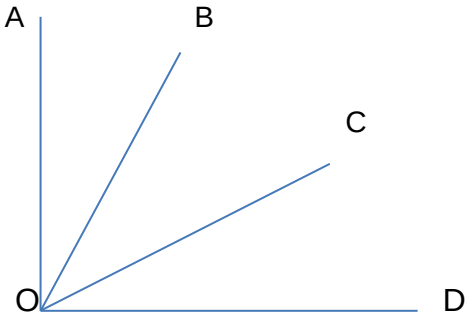
3.According to the figure , what angle is equal to b ? What do you call such a pair of angles?



4.Find the value of *b* and write the reason.

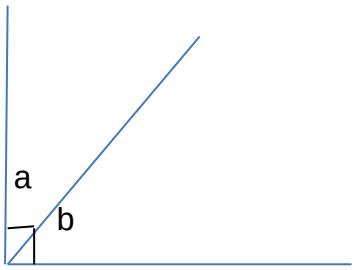


5..Angle AOD is a right angle . Write a complementary angle for angle AOB



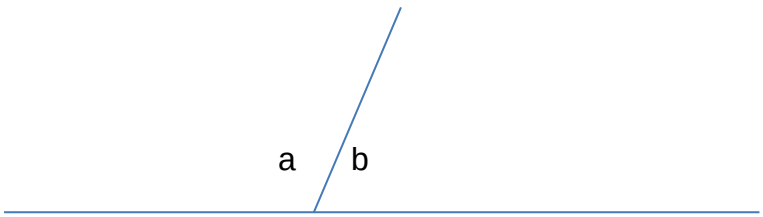
6.What angles are ” a” and ” b” ?

What is the sum of “ a” and “b” ?

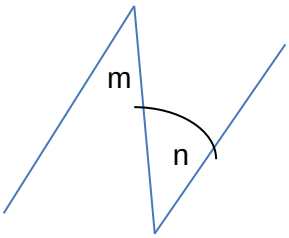


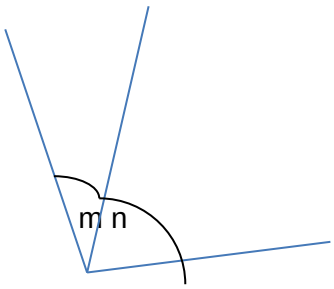
7..What angles are ” a” and ” b” ?

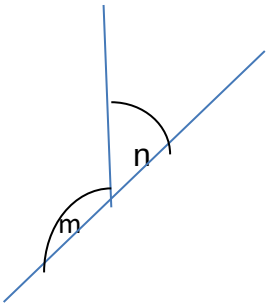
What is the sum of “ a” and “b” ?

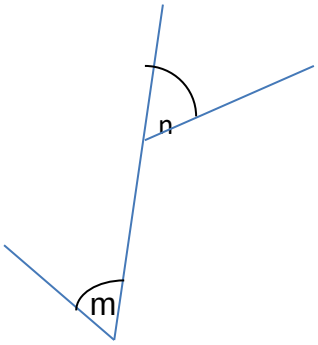


8.In which of the following figures do m " m" and "n" represent a pair of adjacent angles



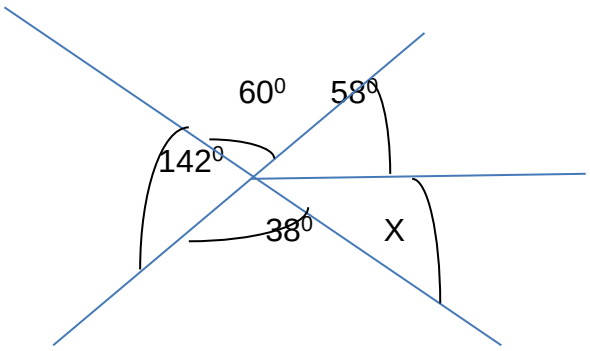






9.According to the data given in the figure

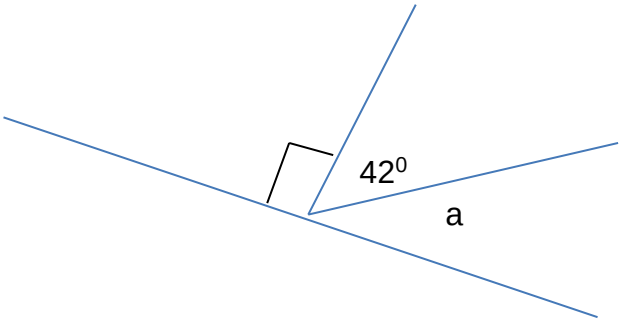
(iName a straight line



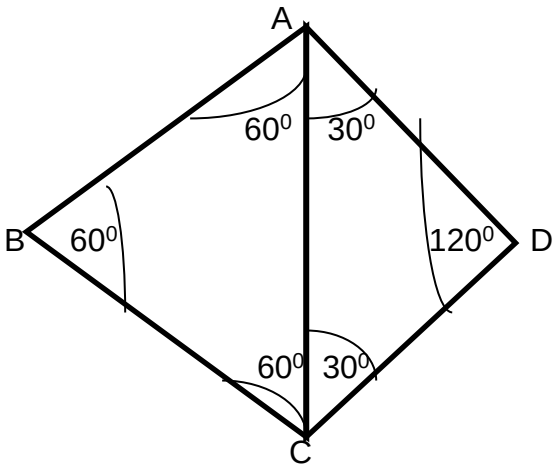
(ii)Give reasons for it

(iii)Find the value of "x"

10.Find the value of “a”



11.Based on the magnitudes of the angles shown in the figure. Write ,

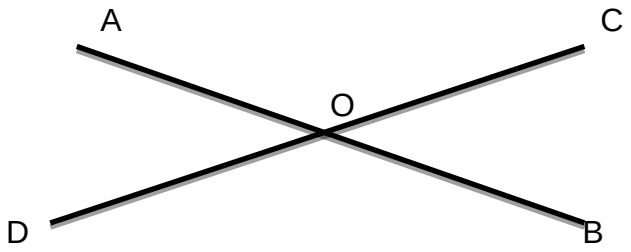


(i)Four pairs of complementary angles

(ii) Two pairs of complementary adjacent angles

(iii) Two pairs of supplementary angles.

12.In the figure , the straight lines AB and CD intersect each other at O .



(i) Write vertically opposite angles for given angles

(a) Angle AOD

(b)Angle AOC

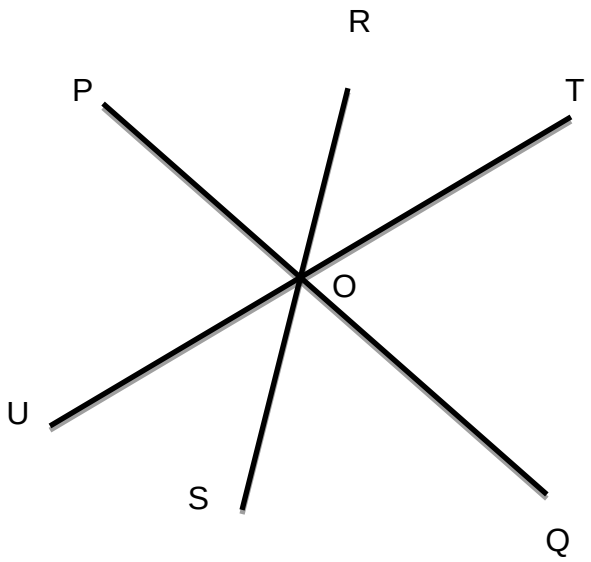
(ii) If angle AOD $= 40^0$, find the magnitudes of following angles

(a) Angle AOC

(b) Angle BOC

(c) Angle BOD

13.



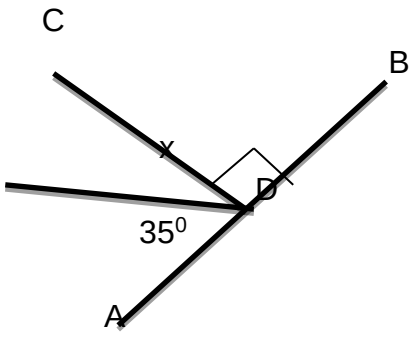
In the figure , the straight lines PQ , RS and TU intersect at O.
Write the vertically opposite angles for given angles

(i) Angle POT

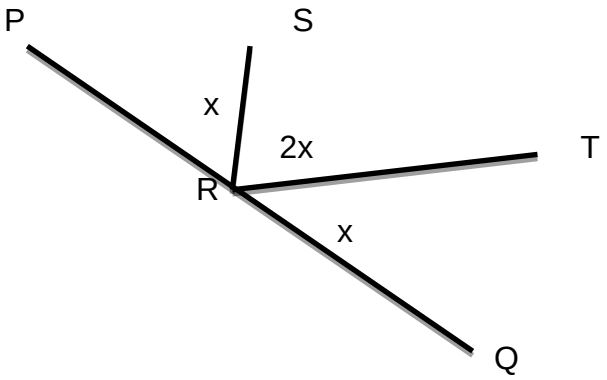
(ii) Angle ROQ

(i) Angle TOS

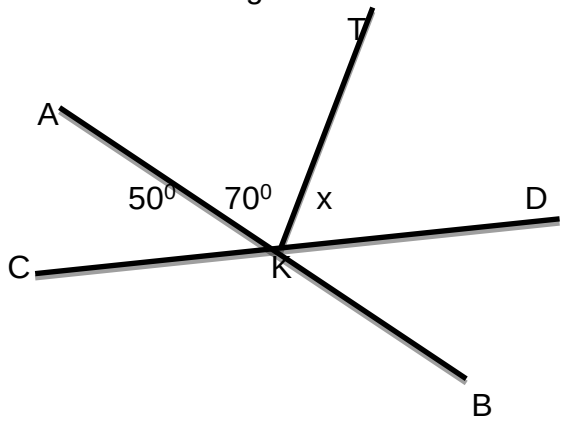
14. AB and CD are straight lines. Find the value of x



15.PQ , RS and TR are straight lines. Find the magnitude of angle SRT.



16.AB , CD and KT are straight lines .Find the value of x



Factors

1.Find the HCF

(i) 3a , 12a , 6 ab

(ii) 2p , 4pq , 6pq

(iii) 5ab , 10 abc , 20 ac

(iv) 4x , 6abx , 10abxy

(v) 8pq , 16pqr , 24pqy

2. Factorize

(i)$10a - 2ac + 4ab$

(ii)$15xyz - 25xy + 20xz$

(iii)$-3x + 9$

(iv) $-6x + 8y$

(v)$8a + 4ab - 4ac$

(vi) $2a - 3ab + 3ab^2$

(vii)$4ap + 8bp + 6p$

(viii)$2a + 4b + 12$

(ix)$6ab - 8ab^2 + 12ac$

(x) $15pq - 35\ pr$