

Q1. What is the disadvantage in comparing line segments by mere observation?

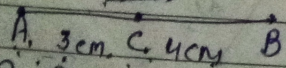
Sol. By mere observation we can't compare the line segments with slight difference in their length. We can't say which line segment is of greater length. Hence, the chances of errors due to improper viewing are more.

Q2. Why is it better to use a divider than a ruler, while measuring the length of a line segment?

Sol. While using a ruler, chances of error occur due to thickness of the ruler and angular viewing. Hence, using divider accurate measurement is possible.

Q3. Draw any line segment, say \overline{AB} . Take any point C lying in between A and B . Measure the lengths of AB , BC and AC . Is $AB = AC + CB$?

Sol. Let us consider,



A, B and C such that C lies between A and B .

Let, $AB = 7\text{cm}$.

$AC = 3\text{cm}$, $CB = 4\text{cm}$.

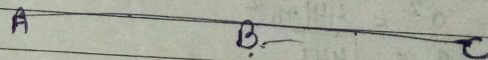
$\therefore AB = AC + CB$

$7 = 3 + 4$

So $AB = AC + CB$

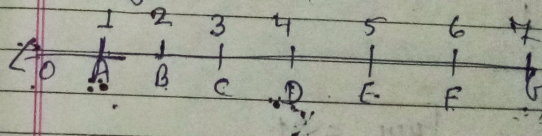
Q4. If A, B, C are three points on a line such that $AB = 5$, $BC = 3\text{cm}$ and $AC = 8\text{cm}$ which one of them lies between the other two?

Sol. We have $AB = 5\text{cm}$, $BC = 3\text{cm}$
 $\therefore AB + BC = 5 + 3 = 8\text{cm}$.
But $AC = 8\text{cm}$.



So, B lies between A and C .

Q5. Verify, whether D is the mid point of overline AG .



Sol. From the given fig. we have

$$AG = 7\text{cm} - 1\text{cm} = 6\text{cm}$$

$$AD = 4\text{cm} - 1\text{cm} = 3\text{cm}$$

$$DG = 4\text{cm} - 1\text{cm} = 3\text{cm}$$

$$AG = AD + DG$$

$$6 = 3 + 3$$

So D is the mid point of AG .

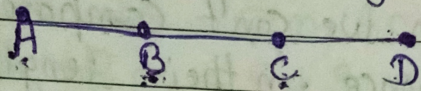
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Chapter - 5

Ex - 5.1

Q6. If B is the mid point of \overline{AC} and C is the mid-point of \overline{BD} , where A, B, C, D lie on a straight line, say why $AB = CD$?

Sol.



B is the mid point of AC, so $AB = BC$ — (1)

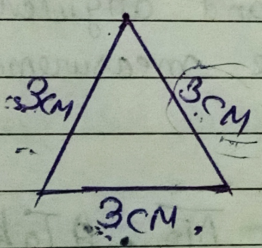
C is the mid point of BD, so $BC = CD$ — (2)

From eq (1) & (2)

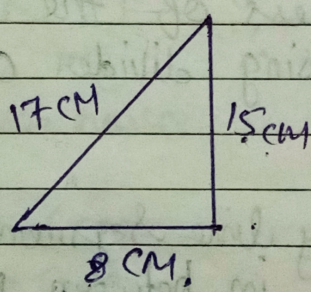
$AB = CD$ is verified

Q7. Draw five triangles and measure their sides. Check in each case, if the sum of the lengths of any two sides always less than the third side.

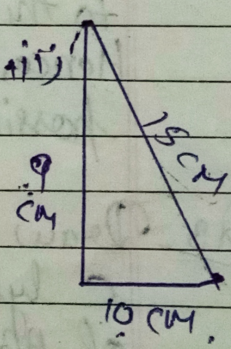
Sol.
(i)



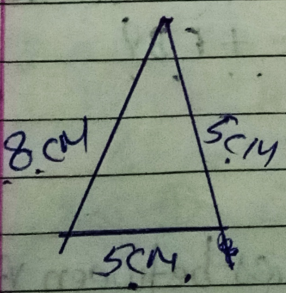
(ii)



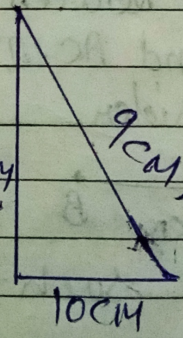
(iii)



(iv)



(v)



Yes, sum of two sides of a triangle is always greater than the third side.

Q1. What fraction of a clockwise revolution does the hour hand of a clock through, when it goes from

Ans. We know that in one complete clockwise revolution, hour hand will rotate by 360° .

(a) 3 to 9.

Sol. When hour hand goes from 3 to 9 clockwise, it will rotate by 2 right angles or

$$\frac{90 + 90 = 180}{360} = \frac{1}{2}$$

(b) 4 to 7.

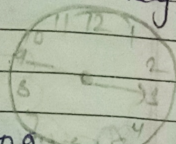
When hour hand goes from 4 to 7 clockwise, it will rotate by 1 right angles or 90° .

$$\frac{90}{360} = \frac{1}{4}$$

(c) 7 to 10

When hour hand goes from 7 to 10 clockwise, it will rotate by 1 right angles or 90° .

$$\frac{90}{360} = \frac{1}{4}$$



(d) 12 to 9

Sol. When hour hand goes from 12 to 9 clockwise, it will rotate by 3 right angles or 270° .

$$\frac{270}{360} = \frac{3}{4}$$

(e) 1 to 10

Sol. When hour hand goes from 1 to 10 clockwise, it will rotate by 3 right angles or

$$\frac{270}{360} = \frac{3}{4}$$

(f) 6 to 3

Sol. When hour hand goes from 6 to 3 clockwise, it will rotate by 3 right angles or 270° .

$$\frac{270}{360} = \frac{3}{4}$$

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Chapter - 5

Ex - 5.1

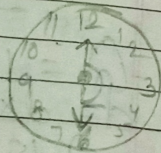
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Q2. Where will the hand of a clock stop if it:

Sol. We know that one complete clock wise revolution
* hour hand will rotate by 360° .

(a) Starts at 12 and makes $\frac{1}{2}$ of a revolution,
Clockwise?

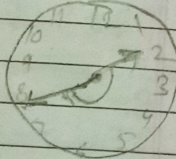
As At 6.



$360 \times \frac{1}{2} = 180^\circ$

(b) Starts at 2 and makes $\frac{1}{2}$ of a revolution,
Clockwise?

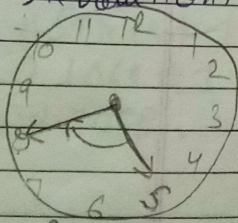
As At 8.



$360 \times \frac{1}{2} = 180^\circ$

(c) Starts at 5 and makes $\frac{1}{4}$ of a revolution,
Clockwise?

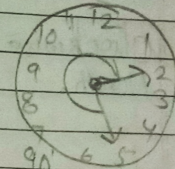
As At 8.



$360 \times \frac{1}{4} = 90^\circ$

(d) Starts at 5 and makes $\frac{3}{4}$ of a revolution,
Clockwise?

As At 2.



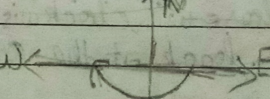
$360 \times \frac{3}{4} = 270^\circ$

Q3. Which direction will you face if you start facing:

Sol. Revolving one complete round in clockwise or in anti clockwise direction we will revolve by 360° and two adjacent direction are at 90° or $\frac{1}{4}$ of a complete revolution away from each other.

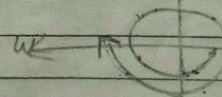
(a) East and make $\frac{1}{2}$ of a revolution, clockwise?

As West.



(b) East and make $1\frac{1}{2}$ of a revolution clockwise?

As West.

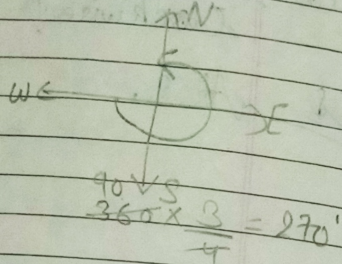


$360 \times \frac{3}{2} = 540^\circ$

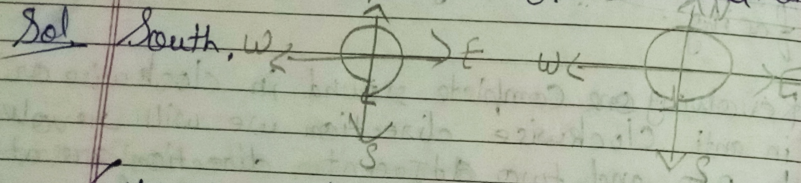
3. West and makes $\frac{3}{4}$ of a revolution

clockwise?

Sol. North.



4. South and make one full revolution?



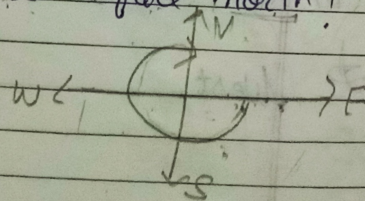
(Should we specify clockwise or anti clockwise for this last question? why not?)

Sol. In case of revolution 1 complete ~~or~~ either clockwise & anti clockwise we will be back at the original position.

Q4. What part of a revolution have you turned through if you stand facing

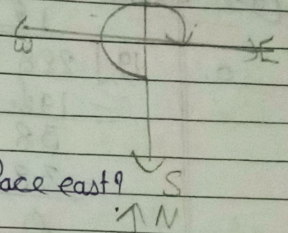
(a) east and turn clockwise to face north?

Sol. $\frac{3}{4}$



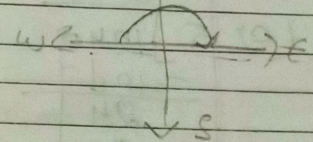
(b) South and turn clockwise to face east?

S. $\frac{3}{4}$



(c) West and turn clockwise to face east?

S. $\frac{1}{2}$

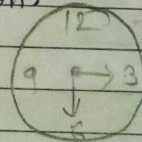


Q5. Find the number of right angles turned through by the hour hand of a clock when it goes from:

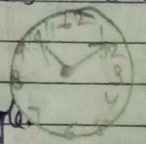
Sol. The hour hand of a clock ~~is~~ revolves by 360 or its covers by 4 right angles in one complete revolution.

(a) 9 to 6.

S. One right angle.

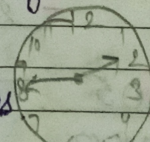


(d) 10 to 1
One right angle.



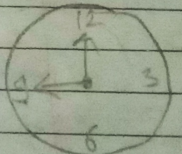
(b) 2 to 8.

S. Two right angles.



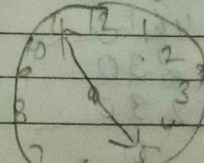
(e) 12 to 9

S. 3 right angles.



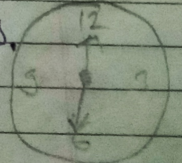
(c) 5 to 11.

S. Two right angles.



(f) 12 to 6

S. 2 right angles.



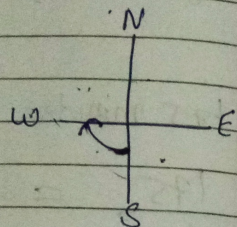
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Chapter - 5 Ex - 5.2

Q6. How many right angles do you make if you start facing :-

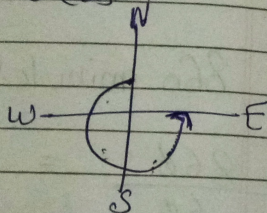
(a) South and turn clockwise to west ?

Sol. one right angle.



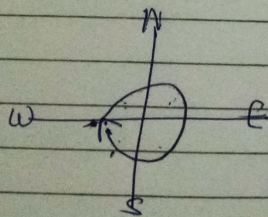
(b) north and turn anti-clockwise to east ?

Sol. 3 right angle.



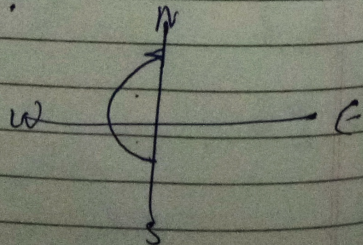
(c) West and turn to west ?

Sol. 4 right angle.



(d) South and turn to north ?

Sol. 2 right angle.



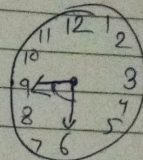
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Q7. Where will the hour hand of a clock stop if it starts :-

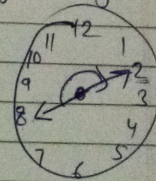
(a) From 6 and turns through 1 right angles ?

Sol. AT 9.



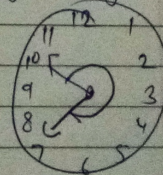
(b) From 8 and turns through 2 right angles ?

Sol. AT 2.



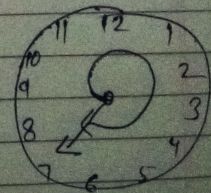
(c) From 10 and turns through 3 right angles ?

Sol. AT 7.



(d) From 7 and turns through 2 straight angles ?

Sol. AT 7.



Exercise 5.3

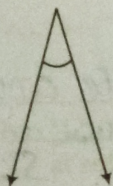
1 Match the following:

(Solve in book)

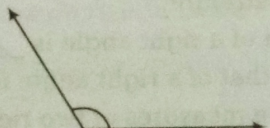
(i) Straight angle	(a) less than one-fourth a revolution ⁽ⁱⁱⁱ⁾
(ii) Right angle	(b) more than half a revolution ^(v)
(iii) Acute angle	(c) half of a revolution ⁽ⁱ⁾
(iv) Obtuse angle	(d) one-fourth a revolution ⁽ⁱⁱ⁾
(v) Reflex angle	(e) between $\frac{1}{4}$ and $\frac{1}{2}$ of a revolution ^(iv)
	(f) one complete revolution

2 Classify each one of the following angles as right, straight, acute, obtuse or reflex:

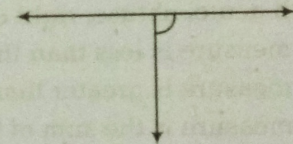
(a) \Rightarrow acute angle.



(a)

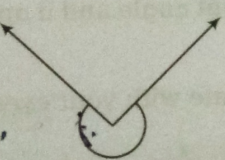


(b) obtuse angle.

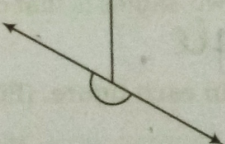


(c) right angle.

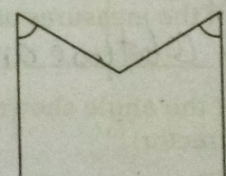
(d) reflex angle.



(d)



(e) straight angle.



(f) acute angle. (F)

Exercise 5.4

1 What is the measure of (i) a right angle? (ii) a straight angle?

Ans (i) 90° Ans (ii) 180°

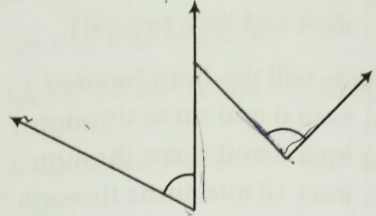
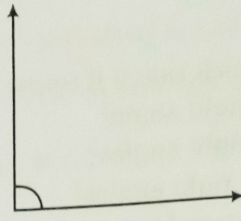
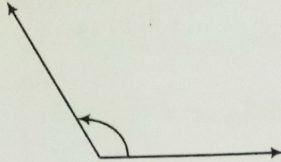
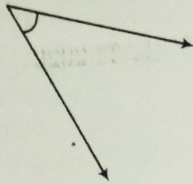
2 Say True or False:

- (a) The measure of an acute angle $< 90^\circ$. \rightarrow True.
- (b) The measure of an obtuse angle $< 90^\circ$. \rightarrow False.
- (c) The measure of a reflex angle $> 180^\circ$. \rightarrow True.
- (d) The measure of one complete revolution = 360° . \rightarrow True.
- (e) If $m\angle A = 53^\circ$ and $m\angle B = 35^\circ$, then $m\angle A > m\angle B$. True.

3 Write down the measures of:
 (a) some acute angles $\Rightarrow 50^\circ, 65^\circ$
 (Give at least two examples of each.)

(b) some obtuse angles $\Rightarrow 110^\circ, 175^\circ$

4 Measure the angles given below, using the protractor and write down the measure:



(i) 45° (a)

(ii) 120° (b)

(iii) 90° (c)

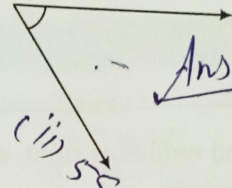
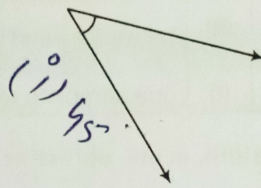
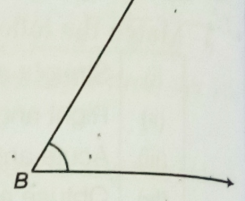
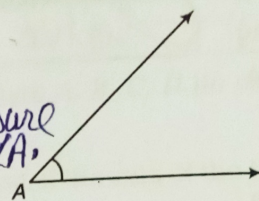
(d) $60^\circ, 90^\circ, 130^\circ$

5 Which angle has a large measure? First estimate and then measure:

Measure of angle A = 40°

Measure of angle B = 68° (B has a large measure than A.)

6 From these two angles which has larger measure? Estimate and then confirm by measuring them:



Ans so second figure is greater.

7 Fill in the blanks with acute, obtuse, right or straight:

(a) An angle whose measure is less than that of a right angle is acute angle.

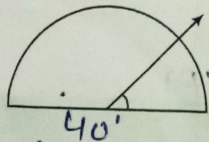
(b) An angle whose measure is greater than that of a right angle is obtuse angle.

(c) An angle whose measure is the sum of the measures of two right angles is straight angle.

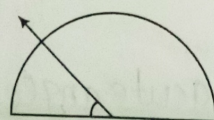
(d) When the sum of the measures of two angles is that of a right angle, then each one of them is acute angle.

(e) When the sum of the measures of two angles is that of a straight angle and if one of them is acute then the other should be obtuse angle.

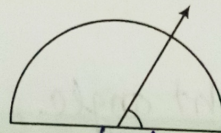
8 Find the measure of the angle shown in each figure. (First estimate with your eyes and then find the actual measure with a protractor).



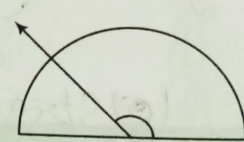
40°



130°

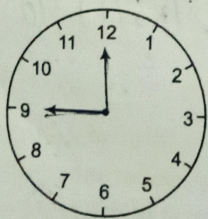


65°

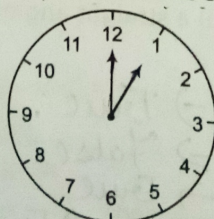


135°

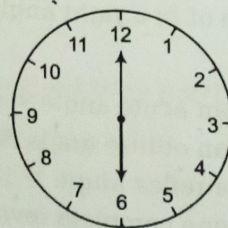
9 Find the angle measure between the hands of the clock in each figure:



9.00 a.m.



1.00 p.m.



6.00 p.m.

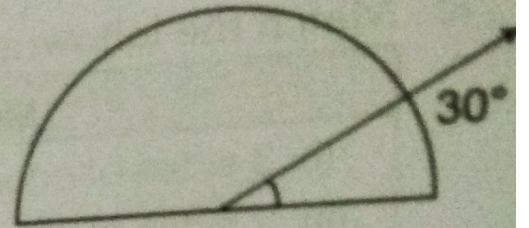
(i) 90°

(ii) 30°

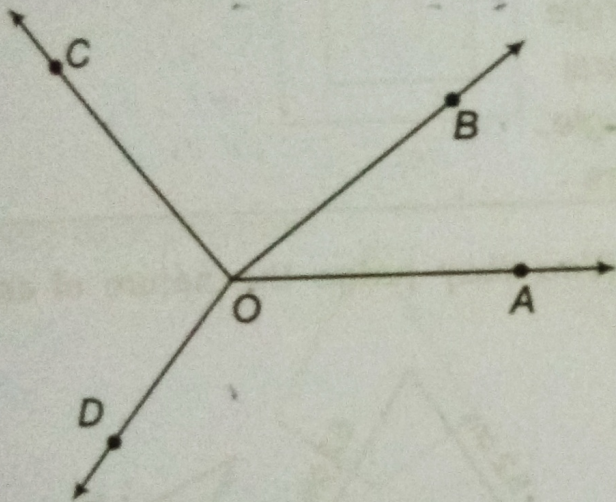
(iii) 180°

Investigate:

In the given figure, the angle measure 30° . Look at the same figure through a magnifying glass. Does the angle become larger? Does the size of the angle change?



1. Measure and classify each angle :



Angle	Measure	Type
$\angle AOB$	40°	Acute
$\angle AOC$	125°	Obtuse
$\angle BOC$	85°	Acute
$\angle DOC$	95°	Obtuse
$\angle DOA$	140°	Obtuse
$\angle DOB$	180°	Straight

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Chapter - 5.5

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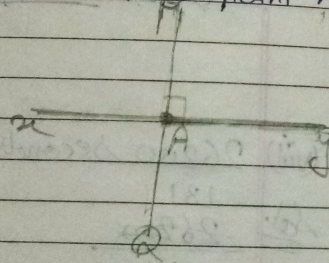
Q1. Which of the following are models for perpendicular lines:-

- (a) The adjacent edges of a table top.
- (b) The lines of a railway track.
- (c) The lines segments forming the letter 'L'
- (d) The letter V.

Ans. A and C.

Q2. Let \overline{PO} be the perpendicular to the line segment \overline{xy} , let \overline{PA} and \overline{OY} intersect in the point A. What is the measure of $\angle PAO$.

Sol. measure of $\angle PAO = 90^\circ$



Q3. There are two set squares in your box. What are the measures of the angles that are formed at their corners? Do they have any angle measure that is common?

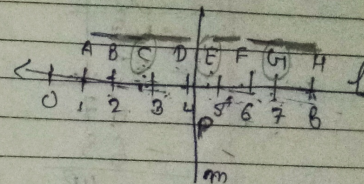
Ans.

The measure of angles in 1 set square are 30° , 60° and 90° .

The other set square has a measure of angles 45° , 45° and 90° .

Yes, the angle of measure 90° is common in between them.

Q4. Study the diagram. The line l is perpendicular to line m .



(a) Is $CE = EG$?

Sol. Yes, since $CE = 2$ units and $EG = 2$ units respectively.

(b) Does PE bisect CG ?

Ans. Yes, $CE = EG$ as both are of 2 units, so PE bisect CG .

(c) Identify any 2 line segments for which PE is the perpendicular bisector.

Ans. \overline{BH} and \overline{DF} are the line segments for which PE is the perpendicular bisector.

(d) Are these true?

(i) $AC > EG$, True. Since $AC = 2$ units and $EG = 1$ unit.

(ii) $CD = GH$, True because both are of 1 unit.

(iii) $BC < EH$, True $BC = 1$ unit and $EH = 3$ units.

Types of Triangle's (Δ)

By Side:

1. Equilateral Δ = has three equal sides
2. Isosceles Δ = has two equal sides.
3. Scalene Δ = has no equal sides.

By angle

1. Acute Δ = has three angles $\leq 90^\circ$
2. Right Δ = has one angle $= 90^\circ$
3. Obtuse Δ = has one angle $> 90^\circ$

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Ex 5.6

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Q1. Name the types of following triangles:-

(a) Triangle with lengths of sides 7cm, 8cm and 9cm.
Ans Scalene Δ .

(b) ΔABC with $AB = 8.7$ cm, $AC = 7$ cm and $BC = 6$ cm.
Ans Scalene Δ .

(c) ΔPQR such that $PQ = QR = PR = 5$ cm.
Ans Equilateral Δ .

(d) ΔDEF with $m\angle D = 90^\circ$.
Ans Right Δ .

(e) Δxyz with $m\angle y = 90^\circ$ and $xy = yz$.
Ans Right angled Isosceles Δ .

(f) ΔLMN with $m\angle L = 30^\circ$, $m\angle M = 70^\circ$, $m\angle N = 80^\circ$.
Ans Acute angled Δ .

Q2. Match ups.
Measure of Δ

Types of Δ

- (i) 3 sides of equal length
- (ii) 2 sides of equal length
- (iii) All sides are of different length
- (iv) 3 acute angles
- (v) 1 right angle
- (vi) 1 obtuse angle
- (vii) 1 right angle with 2 sides of equal length.

- (a) Scalene (iii)
- (b) Isosceles right angle (vii)
- (c) Obtuse angle (vi)
- (d) Right angle (v)
- (e) Equilateral (i)
- (f) Acute angled (ii)
- (g) Isosceles (iv)

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Q3. Name each of the following triangles in two different ways; (You may judge the nature of angle by observation):

Ans (a) Acute angled and Isosceles Δ .

(b) Right angled and Scalene Δ .

(c) Obtuse angled and Isosceles Δ .

(d) Right angled and Isosceles Δ .

(e) Equilateral and acute angled Δ .

(f) Obtuse angled and Scalene Δ .

1. Say True and False:-

- (a) Each angle of rectangle is a right angle. (True)
 (b) The opposite sides of a rectangle are equal in length.
 (c) ~~The~~ (True).
 (c) The diagonals of a square are perpendicular to one another. (True)
 (d) All the sides of a rhombus are of equal length. (True)
 (e) All the sides of a parallelogram are of equal length. (False)
 (f) The opposite sides of a trapezium are parallel. (False).

2. Give reasons for the following:-

- (a) A square can be thought of as a special rectangle.
 As a rectangle with all sides equal becomes a square.
 (b) A rectangle can be thought of as a special parallelogram.
 As a parallelogram with each angle a right angle becomes a rectangle.
 (c) A square can be thought of as a special rhombus.
 As a rhombus with each angle a right angle becomes a square.
 (d) Squares, rectangles, parallelograms are all quadrilaterals.
 As all these are four-sided polygons made of line segments.

- (e) A square is also a parallelogram.
 As all the opposite sides of a square are parallel, so it is a parallelogram.

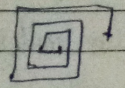
Q3. A fig. is said to be regular if its sides are equal in length and angles are equal in measure. Can you identify the regular quadrilateral?

As square is a regular quadrilateral because all the interior angles are of 90° and all sides are of same length.

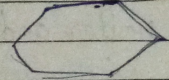
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Ex. 5.8

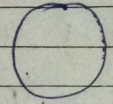
Q1. Examine whether the following are Polygons. If anyone among these is not, say why?



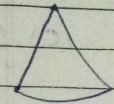
(a)



(b)



(c)



(d)

Sol. (a) It is not a closed fig. So it is not a polygon.

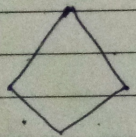
(b) It is a polygon made of 6 sides.

(c) No it is not a polygon because it is not made of line segments.

(d) It is not a polygon as it is not made of line segments.

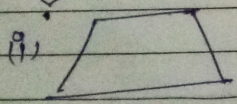
Q2. Name each polygon. (Make two more examples of each these.)

(a)

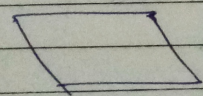


= Quadrilateral.

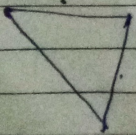
Ex. (i)



(ii)

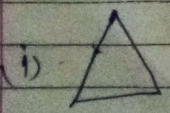


(b)

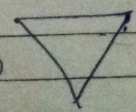


= Triangle

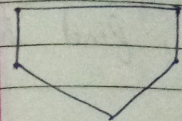
Ex. (i)



(ii)

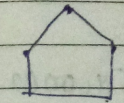


(c)

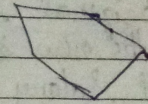


= Pentagon.

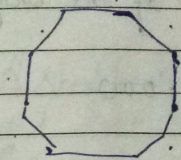
Ex. (i)



(ii)

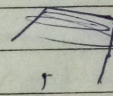


(d)

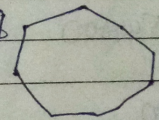


= Octagon.

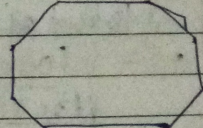
Ex. (i)



(ii)



Ex. 5.9



Q3. Match ups-

(a) Cone

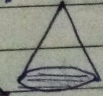
(i)



(e)

(b) Sphere

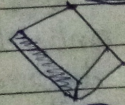
(ii)



(a)

(c) Cylinder

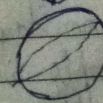
(iii)



(d)

(d) Cuboid

(iv)



(b)

(e) Pyramid

(v)



(c)

Give two new ex. of each shape.

- (a) Cone \rightarrow ice cream cone, birthday cap.
- (b) Sphere \rightarrow cricket ball, tennis ball.
- (c) Cylinder \rightarrow road roller and lawn roller.
- (d) Cuboid \rightarrow book and a brick.
- (e) Pyramid \rightarrow diamond & Egypt Pyramids.

Q2: What shape is :-

(a) Your instrument box ?

A Cuboid.

(b) A brick's ?

A Cuboid.

(c) A match box ?

A Cuboid.

(d) A road-roller ?

A Cylinder.

(e) A sweet laddu ?

A sphere.