



ACTIVITY

Equal Division Of A Line Segment

Objective

To divide a line segment into equal parts.

Material Required

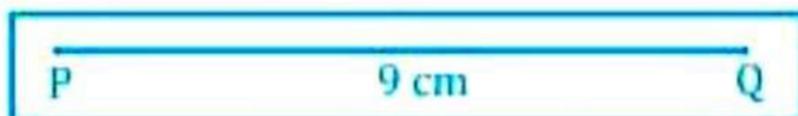
A sheet of ruled paper in which all the lines are parallel and equidistant, tracing paper or transparent sheet, geometry box.

Theory

Intercept Theorem: If there are three (or more) parallel lines and intercepts made by them on any transversal are equal, then intercepts made by them on any other transversal are also equal.

Procedure

1. Take a piece of tracing paper sheet and draw a line segment of length 10 cm or 9 cm (let line segment is to be divided into 7 equal parts). Name it as PQ.



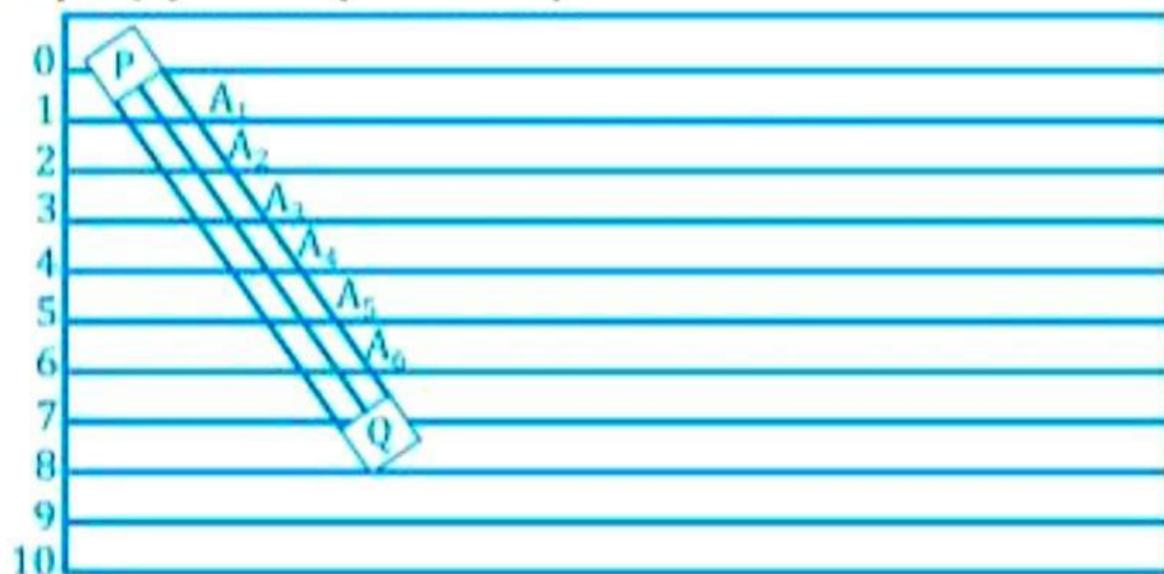
2. Now, take a ruled sheet, and mark the lines as 0, 1, 2, 3, 4...10 from top to bottom.
3. Place the paper strip (tracing paper) on the ruled sheet such that the point P coincides as with the line (ruled sheet) marked 0, and another point Q coincides with the line marked 7 as shown in fig. (i).
4. Mark the points on PQ which are the points of intersection with lines of a ruled sheet as $A_1, A_2, A_3, \dots, A_6$.
5. Now remove the ruled sheet.

Observation

7 equal parts will be obtained.

$$PA_1 = A_1A_2 = A_2A_3 = A_3A_4 = A_4A_5 = A_5A_6 = A_6Q.$$

Here, marked axis PQ is a transversal on parallel lines of the ruled sheet with equal intercept. Therefore, PQ also has equal intercepts (By intercept theorem).



Result

Line PQ is divided into 7 equal parts.

Learning Outcome

By paper activity, a line segment of any measurement can be divided into equal parts.

Activity Time

1. Draw a line segment of 7 cm and divide it into 6 equal parts and draw perpendicular on the 4th point of a line segment, by paper folding.
2. Take any rectangular sheet of 5 cm by 9 cm and divide the edges of a sheet into 8 equal parts.
3. Take any rectangular sheet of 10 cm by 7 cm and divide along the length in 10 equal parts and along with the breadth in 7 equal parts (By paper folding).

Viva Voce

Q1. Define parallel lines.

Ans: Two lines in a plane are said to be parallel lines if they do not have a common point i.e., they do not intersect.

Q2. Define parallel rays.

Ans: Two rays in the same plane are parallel if they do not intersect each other even if extended indefinitely beyond their initial points.

Q3. Define parallel line segments.

Ans: Two-line segments are parallel if the corresponding line segments determined by them are parallel.

Q4. To divide a thread in 10 equal parts, how many successive folds will you give?

Ans: 9 folds.

Q5. Define intercept theorem?

Ans: The Intercept theorem provides the ratios between the line segments created when two parallel lines are intercepted by two intersecting lines.

Q6. Define transversal line.

Ans: A-line intersecting two or more given lines in a plane at different points is called a transversal to the given lines.

Q7. Write any four examples of parallel line segments.

Ans: The four examples are the opposite edges of a plain paper, the opposite edges of a black board, the opposite edges of a scale, railway lines.

Multiple Choice Questions

Q 1. Write first two equivalent fractions of $\frac{3}{5}$:

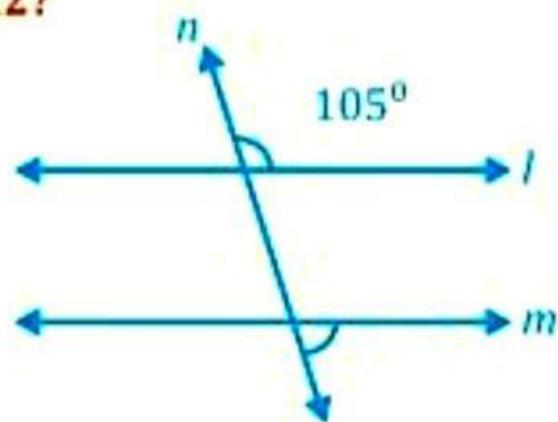
(a) $\frac{5}{2}, \frac{10}{2}$

(b) $\frac{10}{4}, \frac{15}{6}$

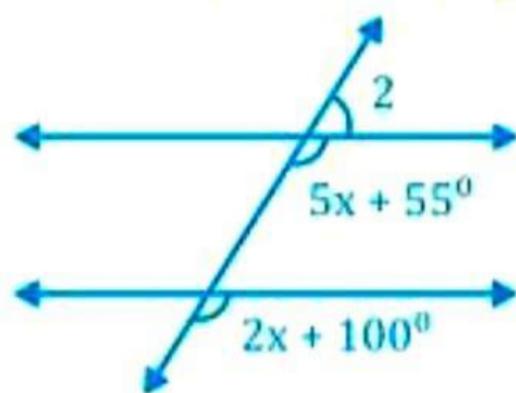
(c) $\frac{6}{10}, \frac{9}{15}$

(d) None of these

- Q 2. If $Q = 12$ cm, is divided into three equal parts, what is the ratio of first two parts to the remaining part?
- (a) 2:1 (b) 1:1 (c) 3:2 (d) None of these
- Q 3. Find x , if $\frac{10}{9} = \frac{30}{x}$;
- (a) 30 (b) 27 (c) 25 (d) None of these
- Q 4. The length of a line segment is 24 cm, what is the length of each part, if it is divided into 10 equal parts?
- (a) 1.2 cm (b) 2.5 cm (c) 2.4 cm (d) None of these
- Q 5. If $\frac{8}{5} = \frac{x}{25}$ what is the value of x ?
- (a) 35 (b) 40 (c) 15 (d) None of these
- Q 6. If $Q = 20$ cm, is divided into four equal parts, what is the ratio of the first two parts to the whole part?
- (a) 1 : 1 (b) 2 : 1 (c) 1 : 2 (d) None of these
- Q 7. The following diagram shows two parallel lines cut by a transversal. What is the measure of $\angle Z$?



- (a) 15° (b) 75° (c) 50° (d) 80°
- Q 8. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 2:3, then the greater of the two angles is:



- (a) 54° (b) 108° (c) 120° (d) 136°

ANSWER KEY

1.(c)	2.(b)	3.(b)	4.(c)	5.(b)	6.(c)	7.(a)	8.(b)
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