ELEMENTS OF GEOMETRY

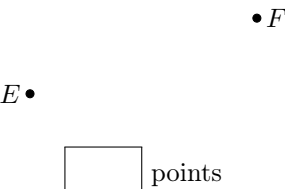## A POINT

A.1 COUNTING NUMBER OF POINTS

Ex 1: Count the points in the figure.
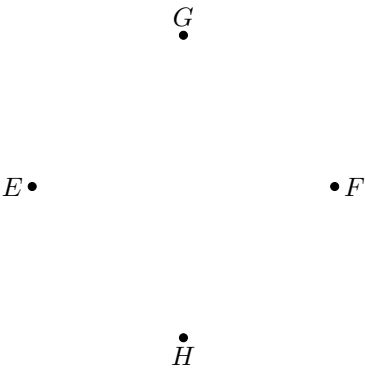
$\bullet B$

$A \bullet$

$\overset{\bullet}{C}$
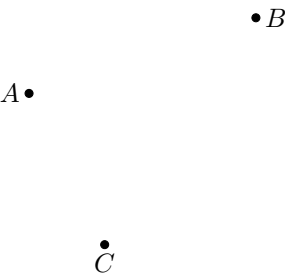
☐ points

Ex 2: Count the points in the figure.

$\bullet F$

$E \bullet$

☐ points

Ex 3: Count the points in the figure.

$\overset{G}{\bullet}$

$E \bullet$ $\qquad\qquad$ $\bullet F$

$\overset{\bullet}{H}$

☐ points

Ex 4: Count the points in the figure.

$I \bullet$
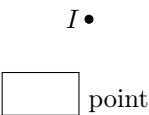
☐ point

A.2 DRAWING POINTS

Ex 5: Using a pencil, draw a point and label it A.

Ex 6: Using a pencil, draw two points and label them A and B.

Ex 7: Using a pencil, draw three points and label them A, B, and C.

B LINES, SEGMENTS AND RAYS

B.1 RECOGNIZING

MCQ 8: Which term describes this figure?

Choose one answer:

☐ Line

☐ Line segment

☐ Ray

MCQ 9: Which term describes this figure?

Choose one answer:

☐ Line

☐ Line segment

☐ Ray

MCQ 10: Which term describes this figure?

Choose one answer:

☐ Line

☐ Line segment

☐ Ray

MCQ 11: Which term describes this figure?
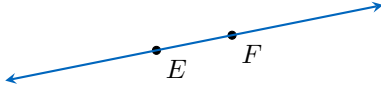
Choose one answer:

☐ Line

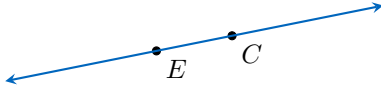☐ Line segment

☐ Ray

B.2 NAMING

MCQ 12: Name the line represented in this figure:

Choose one answer:

☐ $\overline{EF}$
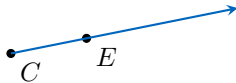
☐ $\overleftrightarrow{EF}$

☐ $\overrightarrow{EF}$

MCQ 13: Name the line represented in this figure:

Choose one answer:

☐ $\overline{CE}$

☐ $\overleftrightarrow{CE}$

☐ $\overrightarrow{CE}$

MCQ 14: Name the ray represented in this figure:

Choose one answer:

☐ $\overline{CE}$

☐ $\overleftrightarrow{CE}$

☐ $\overrightarrow{CE}$

☐ $\overrightarrow{EC}$

MCQ 15: Name the ray represented in this figure:

Choose one answer:

☐ $\overline{EC}$

☐ $\overleftrightarrow{EC}$

☐ $\overrightarrow{CE}$

☐ $\overrightarrow{EC}$

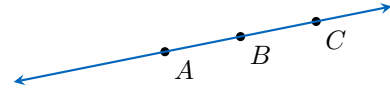**MCQ 16:** Name the segment represented in this figure:

Choose one answer:

☐ $\overline{EC}$

☐ $\overleftrightarrow{EC}$

☐ $\overrightarrow{EC}$

MCQ 17: Name the line represented in this figure:

Choose all correct answers:

☐ $\overleftrightarrow{AB}$

☐ $\overleftrightarrow{AC}$

☐ $\overleftrightarrow{BC}$

B.3 DRAWING LINES, SEGMENTS AND RAYS

Ex 18: Using a ruler and pencil, draw a straight line passing through points A and B. Label both points clearly.

Ex 19: Using a ruler and pencil, draw a line segment passing through points A and B. Label both points clearly.

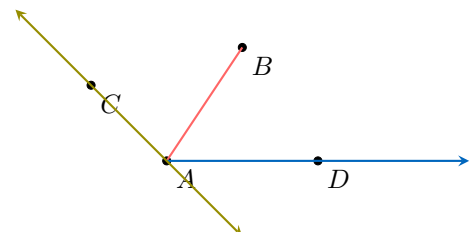**Ex 20:** Using a ruler and pencil, draw a ray passing through points A and B. Label both points clearly.

B.4 CHECKING A CONSTRUCTION PROGRAM
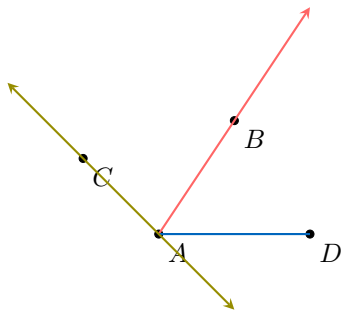
MCQ 21: A teacher gives these construction steps:

1. Draw points A, B, C, and D

2. Draw segment $\overline{AB}$

3. Draw line $\overleftrightarrow{AC}$

4. Draw ray $\overrightarrow{AD}$

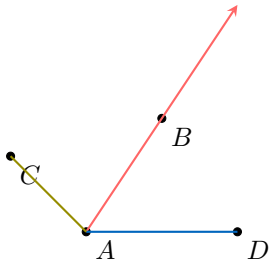Which student followed the instructions correctly? **Select the correct answer:**
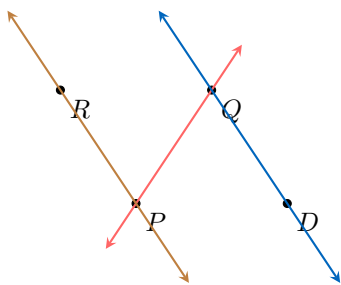
☐ Hugo

□ Louis

□ Vincent

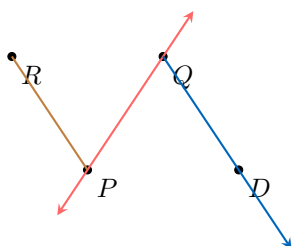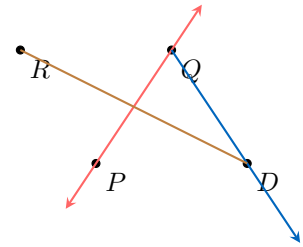**MCQ 22:** A teacher gives these construction steps:

1. Draw points P, Q, R, and D

2. Draw segment $\overline{PR}$

3. Draw line $\overleftrightarrow{PQ}$

4. Draw ray $\overrightarrow{QD}$

Which student followed the instructions correctly? **Select the correct answer:**
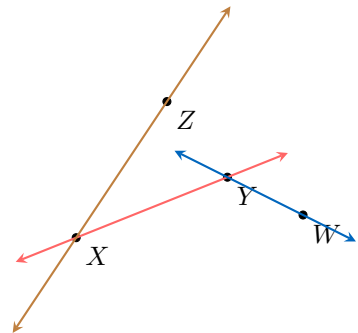
□ Hugo

□ Louis

□ Vincent

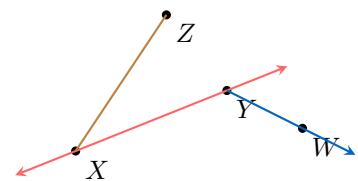**MCQ 23:** A teacher gives these construction steps:

1. Draw points X, Y, Z, and W

2. Draw segment $\overline{XZ}$

3. Draw line $\overleftrightarrow{XY}$

4. Draw ray $\overrightarrow{YW}$

Which student followed the instructions correctly? **Select the correct answer:**
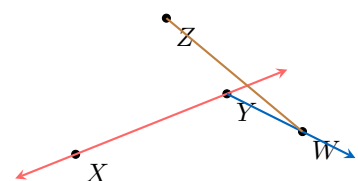
□ Hugo

□ Louis

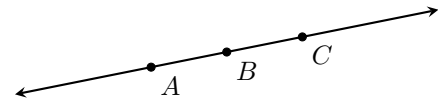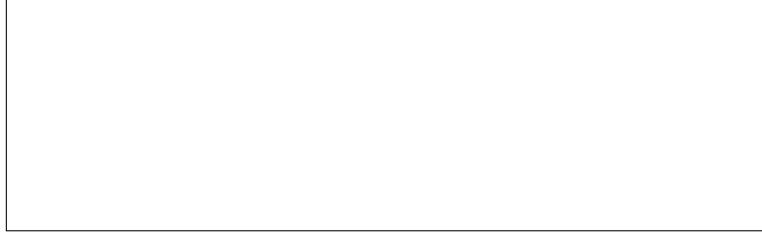□ Vincent

B.5 BUILDING GEOMETRIC FIGURES

Ex 24: Using a ruler and pencil, draw three points A, B, and C, and the straight line $\overleftrightarrow{AB}$.

Ex 25: Using a ruler and pencil, draw three points A, B, and C, and the line segment $\overline{AC}$.

Ex 26: Using a ruler and pencil, draw three points A, B, and C, and the line segments $\overline{AB}$, $\overline{BC}$, and $\overline{CA}$.
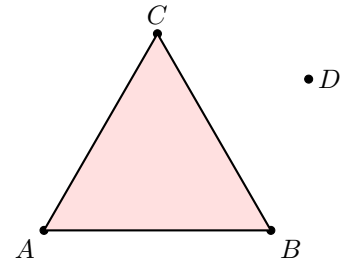
C ELEMENT RELATION

C.1 IDENTIFYING POINTS ON GEOMETRIC FIGURES

Ex 27: Does point C lie on the line through points A and B?

$$C \begin{array}{l} \square \in \\ \square \notin \end{array} \overleftrightarrow{AB}$$

Ex 28: Does point C lie on the ray from A through B?

$$C \begin{array}{l} \square \in \\ \square \notin \end{array} \overrightarrow{AB}$$

Ex 29: Does point C lie on the ray from B through A?

$$C \begin{array}{l} \square \in \\ \square \notin \end{array} \overrightarrow{BA}$$

Ex 30: Does point C lie on the line segment between B and A?

$$C \begin{array}{l} \square \in \\ \square \notin \end{array} \overline{BA}$$

Ex 31: Does point B lie on the line segment between A and C?

$$B \begin{array}{l} \square \in \\ \square \notin \end{array} \overline{AC}$$
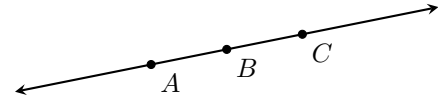
Ex 32: Does point D lie on triangle ABC?

$$D \begin{array}{l} \square \in \\ \square \notin \end{array} \triangle ABC$$
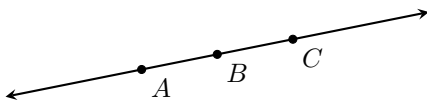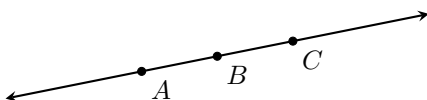
Ex 33: Does point E lie on square $ABCD$?

$$E \begin{array}{l} \square \in \\ \square \notin \end{array} \square ABCD$$
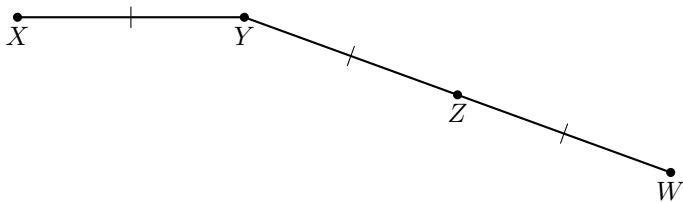
D LENGTH

D.1 USING TICK MARKS TO CALCULATE LENGTHS

Ex 34: The segment $\overline{XY}$ measures 3 cm. Use the tick marks to find the length of segment $\overline{YZ}$.
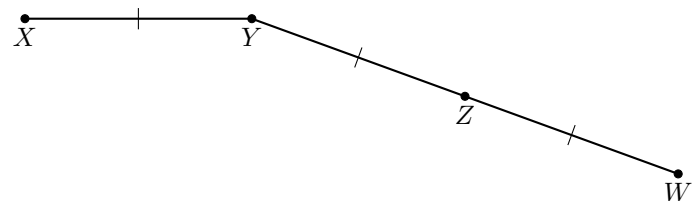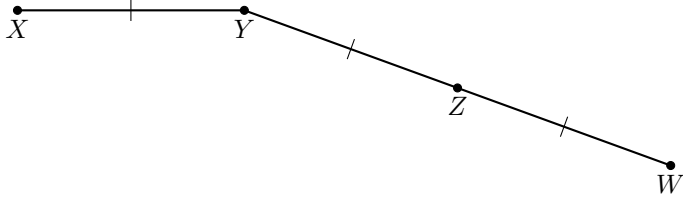
$$YZ = \boxed{} \text{ cm}$$

Ex 35: The segment $\overline{XY}$ measures 3 cm. Use the tick marks to find the length of segment $\overline{ZW}$.
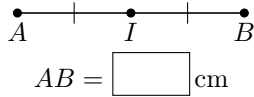
$ZW = \boxed{}$ cm

Ex 36: The segment $\overline{XY}$ measures 3 cm. Use the tick marks to find the length of segment $\overline{YW}$.
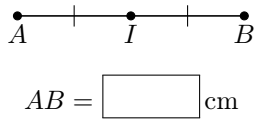

$YW = \boxed{}$ cm

D.2 CALCULATE LENGTHS USING A MIDPOINT

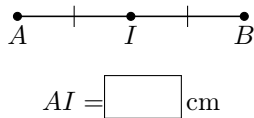**Ex 37:** The segment $\overline{AI}$ measures 3 cm. Use the tick marks to find the length of segment $\overline{AB}$.

$AB = \boxed{}$ cm

Ex 38: The segment $\overline{IB}$ measures 10 cm. Use the tick marks to find the length of segment $\overline{AB}$.
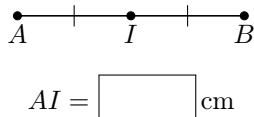

$AB = \boxed{}$ cm

Ex 39: The segment $\overline{AB}$ measures 10 cm. Use the tick marks to find the length of segment $\overline{AI}$.

$AI = \boxed{}$ cm

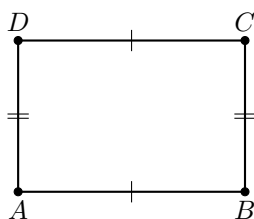**Ex 40:** The segment $\overline{AB}$ measures 20 cm. Use the tick marks to find the length of segment $\overline{AI}$.

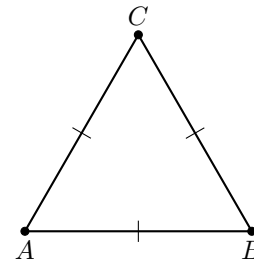$AI = \boxed{}$ cm

D.3 USING TICK MARKS TO FIND PERIMETER

Ex 41: The segment $\overline{AB}$ measures 3 cm and segment $\overline{BC}$ measures 2 cm. Use the tick marks to find the perimeter of rectangle $ABCD$.
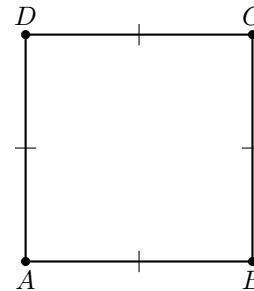

Perimeter of $\square ABCD = \boxed{}$ cm

Ex 42: The segment $\overline{AB}$ measures 3 cm. Use the tick marks to find the perimeter of triangle ABC.

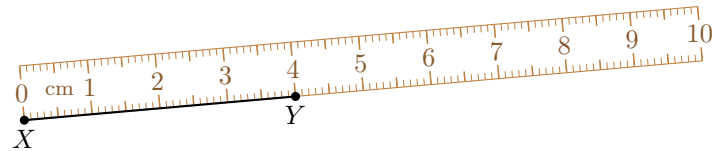
Perimeter of $\triangle ABC = \boxed{}$ cm

Ex 43: The segment $\overline{AB}$ measures 3 cm. Use the tick marks to find the perimeter of square $ABCD$.
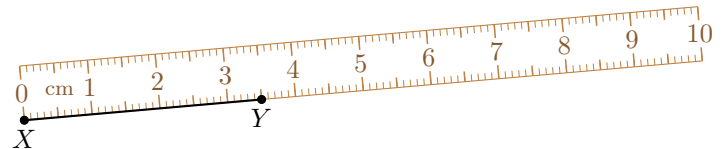

Perimeter of $\square ABCD = \boxed{}$ cm

D.4 MEASURING WITH A RULER

Ex 44: Measure the length of segment $\overline{XY}$ using the ruler shown.
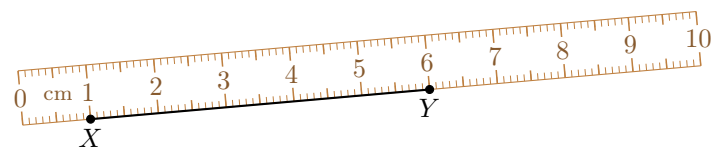

$XY = \boxed{}$ cm

Ex 45: Measure the length of segment $\overline{XY}$ using the ruler shown.

$XY = \boxed{}$ cm

Ex 46: Measure the length of segment $\overline{XY}$ using the ruler shown.

$XY = \boxed{}$ cm

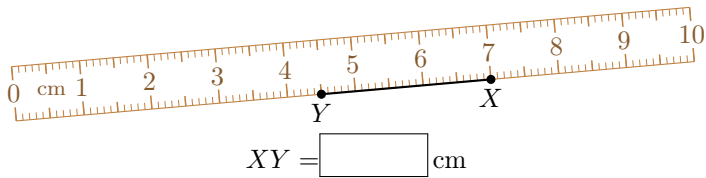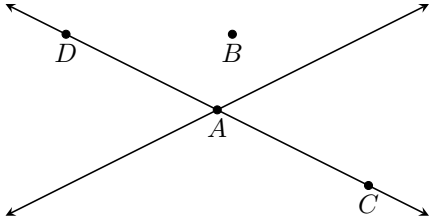**Ex 47:** Measure the length of segment $\overline{XY}$ using the ruler shown.

$XY =$ ⬚ cm

E INTERSECTION POINT
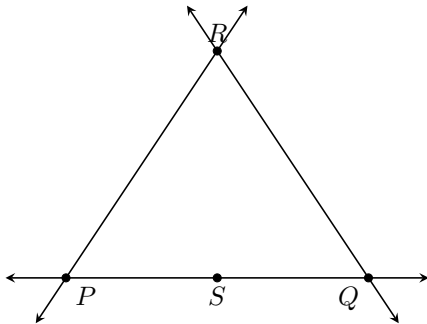
E.1 PICKING THE INTERSECTION POINTS

MCQ 48: Pick the point where the lines intersect.
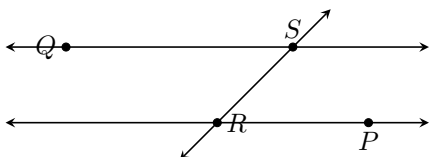

Choose one point:

☐ A

☐ B

☐ C

☐ D

MCQ 49: Pick the points where the lines intersect.

Choose all correct points:

☐ P

☐ Q

☐ R

☐ S
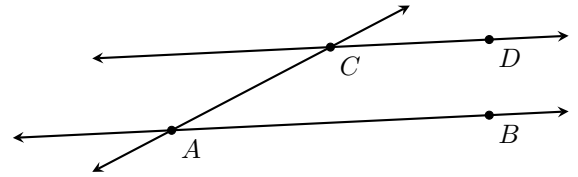
MCQ 50: Pick the points where the lines intersect.

Choose all correct points:

☐ P

☐ Q

☐ R

☐ S

F PARALLEL LINES

F.1 IDENTIFYING PARALLEL LINES

MCQ 51:

Choose the true statement:

☐ $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{AC}$.

☐ $\overleftrightarrow{CD}$ is parallel to $\overleftrightarrow{AC}$.

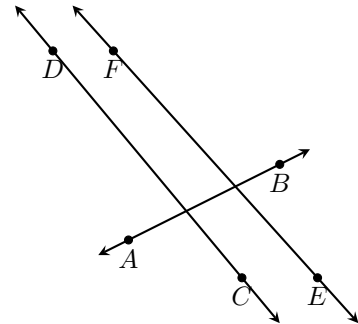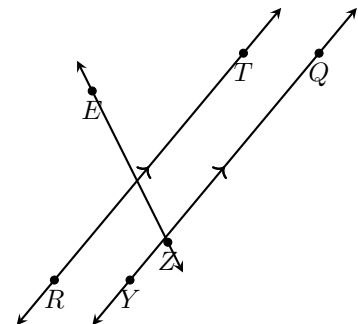☐ $\overleftrightarrow{CD}$ is parallel to $\overleftrightarrow{AB}$.

MCQ 52:

Choose the true statement:

☐ $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{DC}$.

☐ $\overleftrightarrow{DC}$ is parallel to $\overleftrightarrow{FE}$.

☐ $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{FE}$.

MCQ 53:

Choose the true statement:

☐ $\overleftrightarrow{ZE}$ is parallel to $\overleftrightarrow{RT}$.

☐ $\overleftrightarrow{ZE}$ is parallel to $\overleftrightarrow{YQ}$.

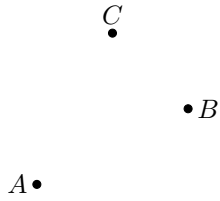☐ $\overleftrightarrow{RT}$ is parallel to $\overleftrightarrow{YQ}$.

MCQ 54: How many lines can pass through points A and B?

$\bullet A \quad \bullet B$

☐ 0

☐ 1

☐ Infinite

MCQ 55: How many lines can pass through points A, B, and C?

C
$\bullet$
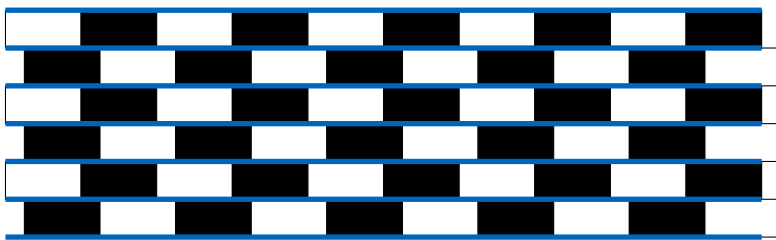
$\bullet B$

$A \bullet$

☐ 0

☐ 1

☐ Infinite

MCQ 56: How many lines can pass through point A?

$\bullet A$

☐ 0

☐ 1

☐ Infinite

MCQ 57: Are the blue thick lines parallel?

☐ Yes

☐ No