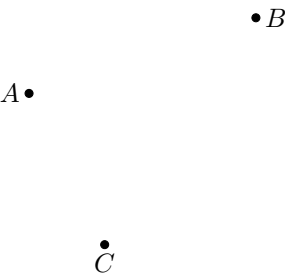


ELEMENTS OF GEOMETRY

A POINT

A.1 COUNTING NUMBER OF POINTS

Ex 1: Count the points in the figure.



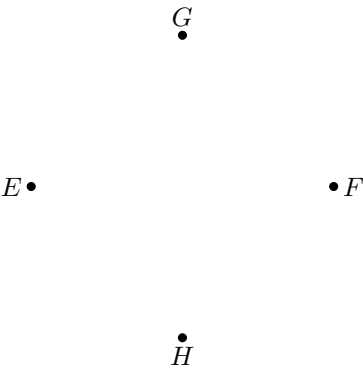
points

Ex 2: Count the points in the figure.



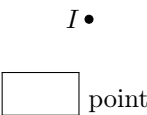
points

Ex 3: Count the points in the figure.



points

Ex 4: Count the points in the figure.



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?

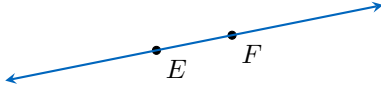


Choose one answer:

- ☐ Line
- ☐ Line segment
- ☐ Ray

B.2 NAMING

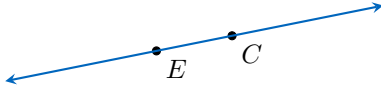
MCQ 12: Name the line represented in this figure:



Choose one answer:

- ☐ \overline{EF}
☐ \overleftrightarrow{EF}
☐ \overrightarrow{EF}

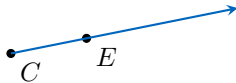
MCQ 13: Name the line represented in this figure:



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:

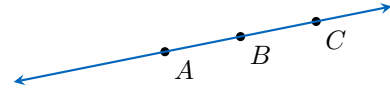


Choose one answer:

- ☐ \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.



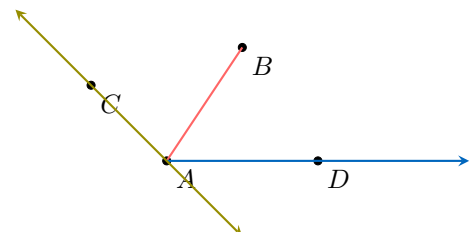
B.4 CHECKING A CONSTRUCTION PROGRAM

MCQ 21: A teacher gives these construction steps:

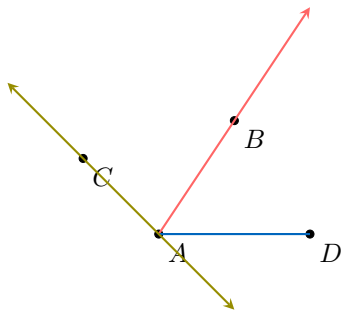
1. Draw points A , B , C , and D
2. Draw segment \overline{AB}
3. Draw line \overleftrightarrow{AC}
4. Draw ray \overrightarrow{AD}

Which student followed the instructions correctly? Select the correct answer:

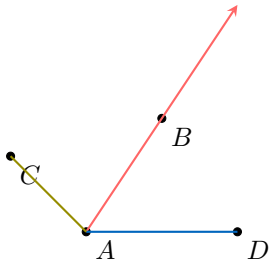
☐ Hugo



☐ Louis



☐ Vincent

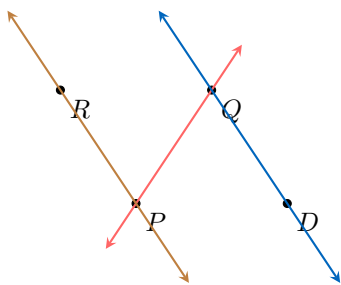


MCQ 22: A teacher gives these construction steps:

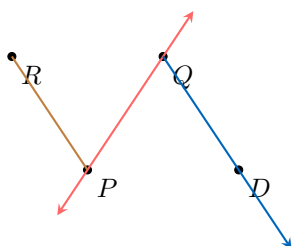
1. Draw points P , Q , R , and D
2. Draw segment \overline{PR}
3. Draw line \overleftrightarrow{PQ}
4. Draw ray \overrightarrow{QD}

Which student followed the instructions correctly? Select the correct answer:

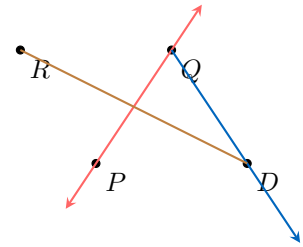
☐ Hugo



☐ Louis



☐ Vincent

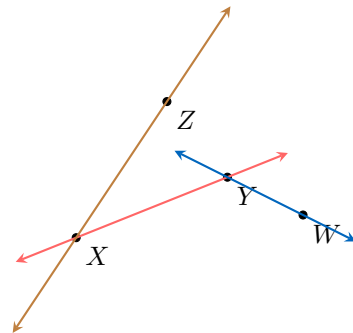


MCQ 23: A teacher gives these construction steps:

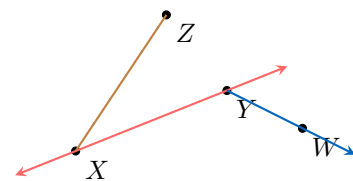
1. Draw points X , Y , Z , and W
2. Draw segment \overline{XZ}
3. Draw line \overleftrightarrow{XY}
4. Draw ray \overrightarrow{YW}

Which student followed the instructions correctly? Select the correct answer:

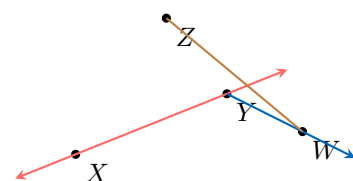
☐ Hugo



☐ Louis



☐ Vincent



B.5 BUILDING GEOMETRIC FIGURES

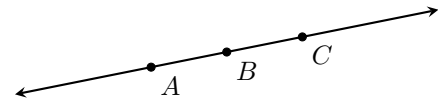
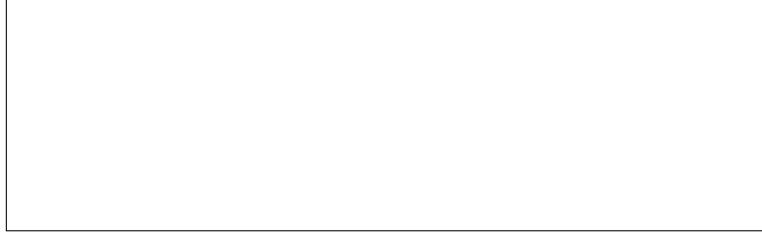
Ex 24: Using a ruler and pencil, draw three points A , B , and C , and the straight line \overleftrightarrow{AB} .



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

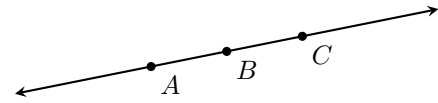


Ex 26: Using a ruler and pencil, draw three points A , B , and C , and the line segments \overline{AB} , \overline{BC} , and \overline{CA} .



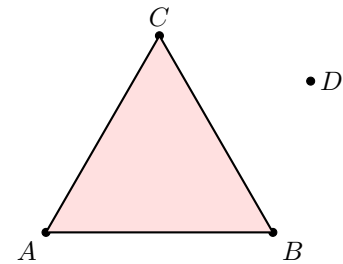
$$\begin{array}{l} \square \in \overline{BA} \\ \square \notin \overline{BA} \end{array}$$

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



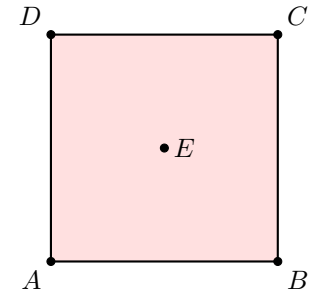
$$\begin{array}{l} \square \in \overline{AC} \\ \square \notin \overline{AC} \end{array}$$

Ex 32: Does point D lie on triangle ABC ?



$$\begin{array}{l} \square \in \triangle ABC \\ \square \notin \triangle ABC \end{array}$$

Ex 33: Does point E lie on square $ABCD$?

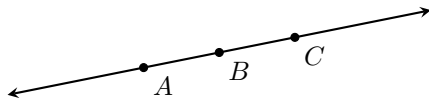


$$\begin{array}{l} \square \in \square ABCD \\ \square \notin \square ABCD \end{array}$$

C ELEMENT RELATION

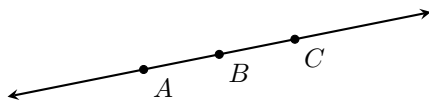
C.1 IDENTIFYING POINTS ON GEOMETRIC FIGURES

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



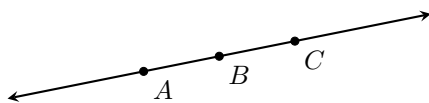
$$\begin{array}{l} \square \in \overleftrightarrow{AB} \\ \square \notin \overleftrightarrow{AB} \end{array}$$

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



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

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



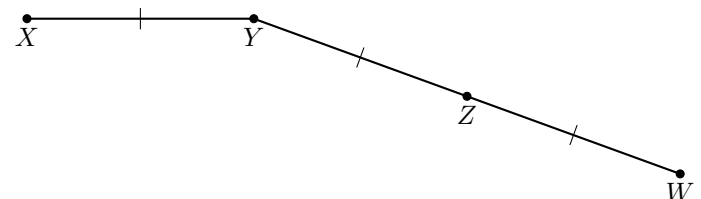
$$\begin{array}{l} \square \in \overrightarrow{BA} \\ \square \notin \overrightarrow{BA} \end{array}$$

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

D LENGTH

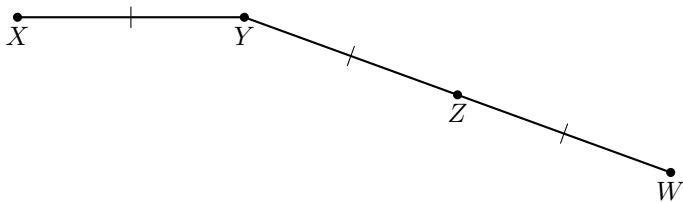
D.1 USING TICK MARKS TO CALCULATE LENGTHS

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



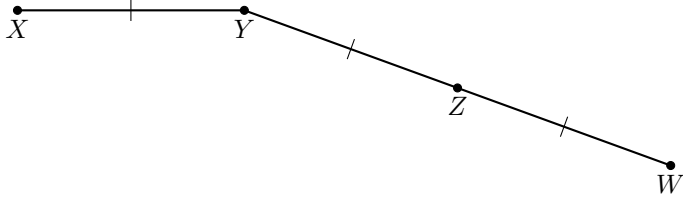
$$YZ = \boxed{} \text{ cm}$$

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



$$ZW = \boxed{} \text{ cm}$$

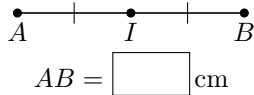
Ex 36: The segment \overline{XY} measures 3 cm. Use the tick marks to find the length of segment \overline{YW} .



$$YW = \boxed{} \text{ cm}$$

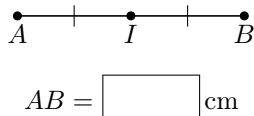
D.2 CALCULATE LENGTHS USING A MIDPOINT

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



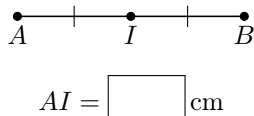
$$AB = \boxed{} \text{ cm}$$

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



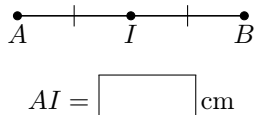
$$AB = \boxed{} \text{ cm}$$

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



$$AI = \boxed{} \text{ cm}$$

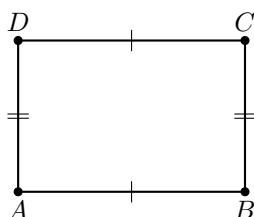
Ex 40: The segment \overline{AB} measures 20 cm. Use the tick marks to find the length of segment \overline{AI} .



$$AI = \boxed{} \text{ cm}$$

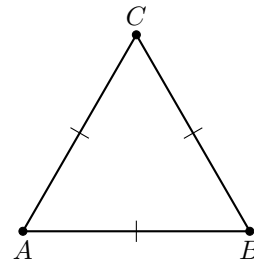
D.3 USING TICK MARKS TO FIND PERIMETER

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 $ABCD$.



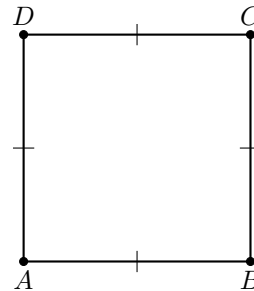
$$\text{Perimeter of } \square ABCD = \boxed{} \text{ cm}$$

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



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

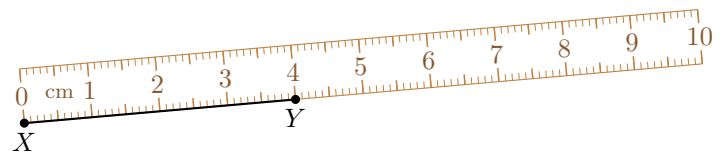
Ex 43: The segment \overline{AB} measures 3 cm. Use the tick marks to find the perimeter of square $ABCD$.



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

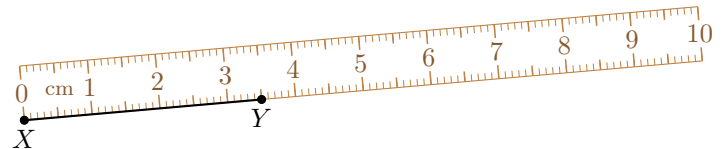
D.4 MEASURING WITH A RULER

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



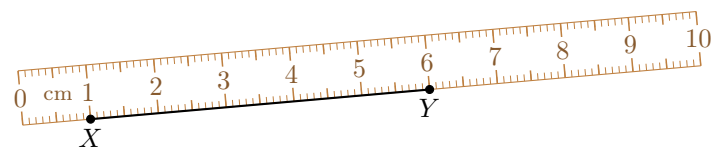
$$XY = \boxed{} \text{ cm}$$

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



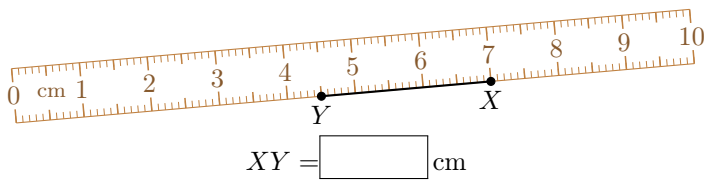
$$XY = \boxed{} \text{ cm}$$

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



$$XY = \boxed{} \text{ cm}$$

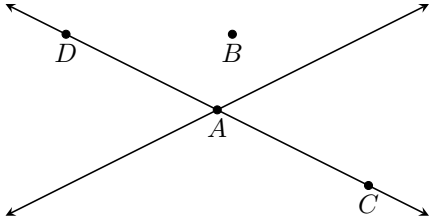
Ex 47: Measure the length of segment \overline{XY} using the ruler shown.



E INTERSECTION POINT

E.1 PICKING THE INTERSECTION POINTS

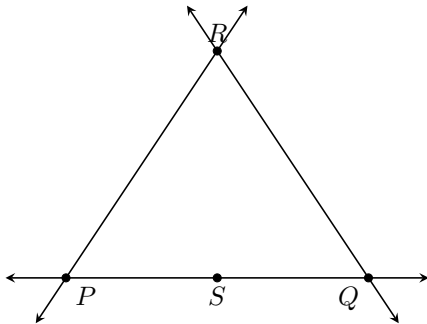
MCQ 48: Pick the point where the lines intersect.



Choose one point:

- ☐ A
- ☐ B
- ☐ C
- ☐ D

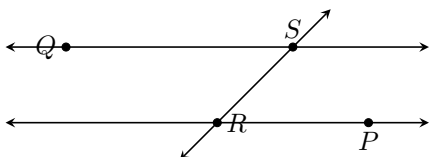
MCQ 49: Pick the points where the lines intersect.



Choose all correct points:

- ☐ P
- ☐ Q
- ☐ R
- ☐ S

MCQ 50: Pick the points where the lines intersect.



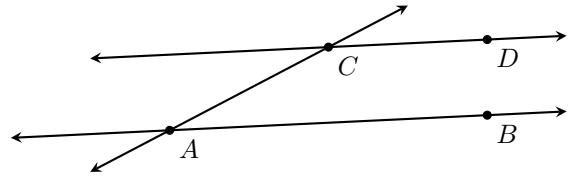
Choose all correct points:

- ☐ P
- ☐ Q
- ☐ R
- ☐ S

F PARALLEL LINES

F.1 IDENTIFYING PARALLEL LINES

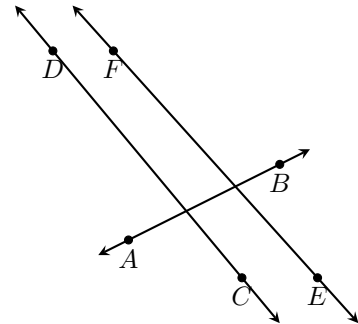
MCQ 51:



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} .

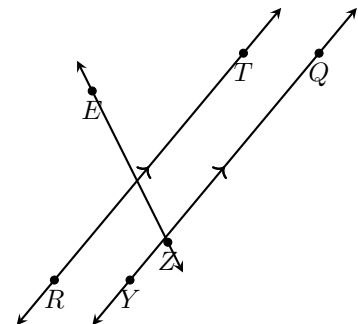
MCQ 52:



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} .

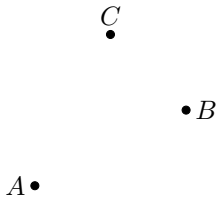
F.2 COUNTING POSSIBLE LINES

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



- ☐ 0
- ☐ 1
- ☐ Infinite

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



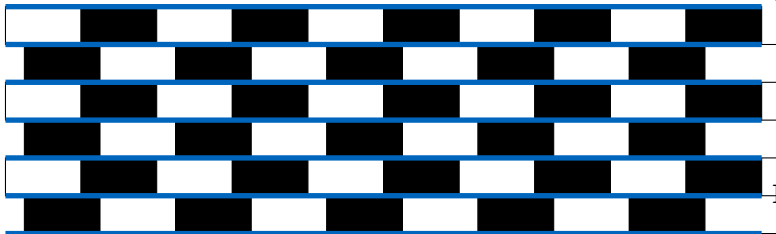
- ☐ 0
- ☐ 1
- ☐ Infinite

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



- ☐ 0
- ☐ 1
- ☐ Infinite

MCQ 57: Are the blue thick lines parallel?

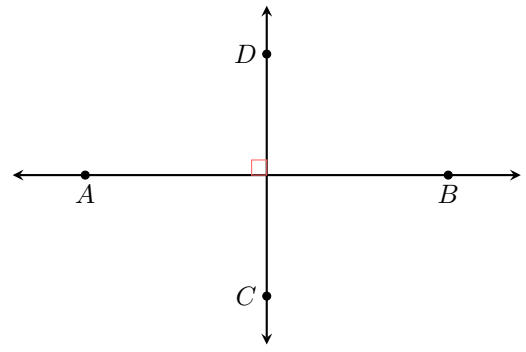


- ☐ Yes
- ☐ No

G PERPENDICULAR LINES

G.1 IDENTIFYING PERPENDICULAR LINES

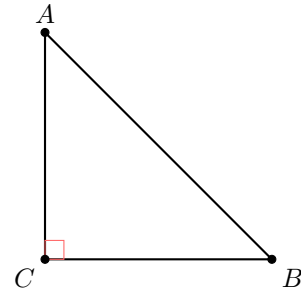
MCQ 58:



Choose the true statement:

- ☐ \overleftrightarrow{CD} is parallel to \overleftrightarrow{AB} .
- ☐ \overleftrightarrow{AB} is parallel to \overleftrightarrow{CD} .
- ☐ \overleftrightarrow{CD} is perpendicular to \overleftrightarrow{AB} .

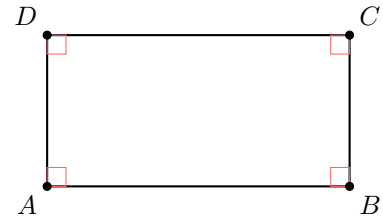
MCQ 59:



Choose the true statement:

- ☐ \overleftrightarrow{AB} is perpendicular to \overleftrightarrow{AC} .
- ☐ \overleftrightarrow{AB} is perpendicular to \overleftrightarrow{BC} .
- ☐ \overleftrightarrow{AC} is perpendicular to \overleftrightarrow{BC} .

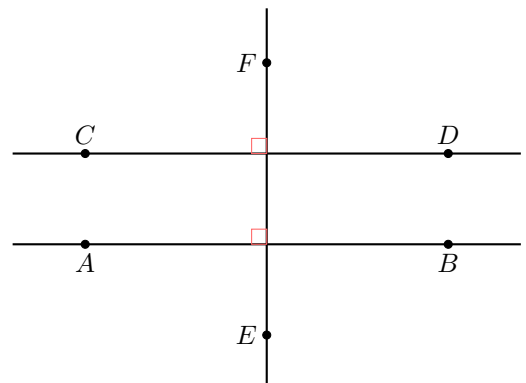
MCQ 60:



Choose all true statements:

- ☐ \overleftrightarrow{AB} is perpendicular to \overleftrightarrow{AD} .
- ☐ \overleftrightarrow{AB} is perpendicular to \overleftrightarrow{BC} .
- ☐ \overleftrightarrow{BC} is perpendicular to \overleftrightarrow{CD} .

MCQ 61:

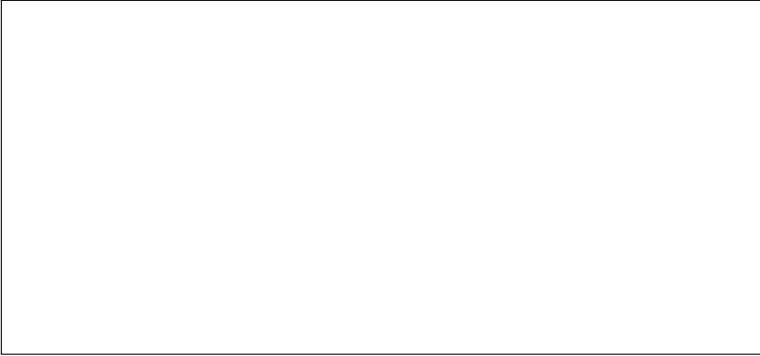


Choose the true statements:

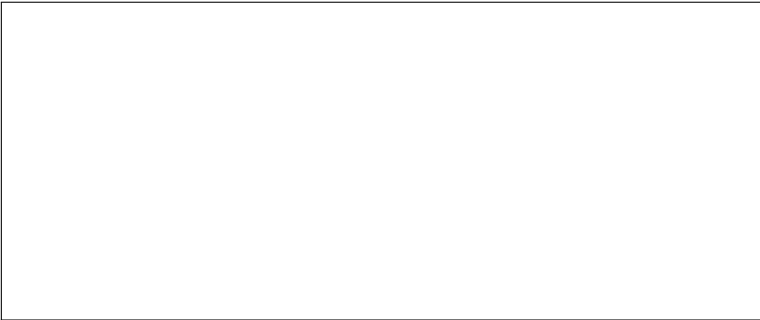
- ☐ \overleftrightarrow{CD} is perpendicular to \overleftrightarrow{AB} .
- ☐ \overleftrightarrow{EF} is perpendicular to \overleftrightarrow{CD} .
- ☐ \overleftrightarrow{EF} is perpendicular to \overleftrightarrow{AB} .

G.2 BUILDING GEOMETRIC FIGURES

Ex 62: Using a ruler, pencil, and set square, draw line \overleftrightarrow{AB} and a perpendicular line through a point P on \overleftrightarrow{AB} .



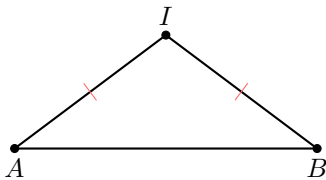
Ex 63: Using a ruler, pencil, and set square, draw two parallel lines \overleftrightarrow{AB} and \overleftrightarrow{CD} , and a line perpendicular to \overleftrightarrow{AB} through a point P on \overleftrightarrow{AB} .



H MIDPOINT AND PERPENDICULAR BISECTOR

H.1 IDENTIFYING MIDPOINTS AND PERPENDICULAR BISECTORS

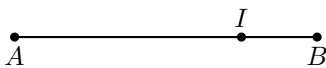
MCQ 64: Point I is the midpoint of segment \overline{AB} .



Is the statement true or false?

- ☐ True
- ☐ False

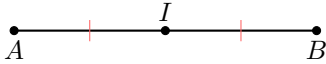
MCQ 65: Point I is the midpoint of segment \overline{AB} .



Is the statement true or false?

- ☐ True
- ☐ False

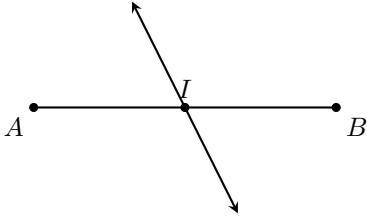
MCQ 66: Point I is the midpoint of segment \overline{AB} .



Is the statement true or false?

- ☐ True
- ☐ False

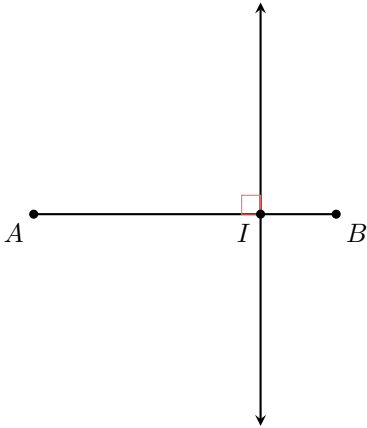
MCQ 67: Line \overleftrightarrow{EF} is the perpendicular bisector of segment \overline{AB} .



Is the statement true or false?

- ☐ True
- ☐ False

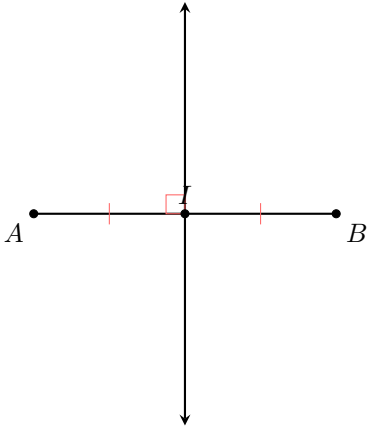
MCQ 68: Line \overleftrightarrow{EF} is the perpendicular bisector of segment \overline{AB} .



Is the statement true or false?

- ☐ True
- ☐ False

MCQ 69: Line \overleftrightarrow{EF} is the perpendicular bisector of segment \overline{AB} .



Is the statement true or false?

- ☐ True
- ☐ False

H.2 BUILDING GEOMETRIC FIGURES

Ex 70: Using a ruler and pencil, draw segment \overline{AB} and its midpoint I .

Ex 71: Using a pencil, draw two points and label them A and B .

Ex 72: Count the points in the figure.

$I \bullet$
 point

Ex 73: Using a ruler, compass, and pencil, draw triangle ABC and construct the perpendicular bisectors of its three sides \overline{AB} , \overline{BC} , and \overline{CA} following the method for constructing a perpendicular bisector. Observe where the perpendicular bisectors intersect.

I PROPERTIES OF PARALLEL LINES

I.1 INVESTIGATING LINE RELATIONSHIPS

MCQ 74: Given that $\overleftrightarrow{l_1}$ is perpendicular to $\overleftrightarrow{l_3}$ and $\overleftrightarrow{l_2}$ is perpendicular to $\overleftrightarrow{l_3}$, what is the relationship between $\overleftrightarrow{l_1}$ and $\overleftrightarrow{l_2}$?

- ☐ Parallel
- ☐ Perpendicular

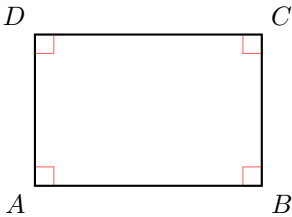
MCQ 75: Given that $\overleftrightarrow{l_1}$ is perpendicular to $\overleftrightarrow{l_3}$ and $\overleftrightarrow{l_1}$ is parallel to $\overleftrightarrow{l_2}$, what is the relationship between $\overleftrightarrow{l_2}$ and $\overleftrightarrow{l_3}$?

- ☐ Perpendicular
- ☐ Parallel

MCQ 76: Given that $\overleftrightarrow{l_1}$ is parallel to $\overleftrightarrow{l_2}$ and $\overleftrightarrow{l_2}$ is parallel to $\overleftrightarrow{l_3}$, what is the relationship between $\overleftrightarrow{l_1}$ and $\overleftrightarrow{l_3}$?

- ☐ Parallel
- ☐ Perpendicular

MCQ 77:



Which student correctly explains why \overleftrightarrow{AB} and \overleftrightarrow{DC} are parallel in rectangle $ABCD$?

- ☐ Su: "I see that \overleftrightarrow{AB} and \overleftrightarrow{DC} are parallel."
- ☐ Louis: "Since \overleftrightarrow{AB} and \overleftrightarrow{AD} are perpendicular and \overleftrightarrow{DC} and \overleftrightarrow{AD} are perpendicular, \overleftrightarrow{AB} and \overleftrightarrow{DC} are parallel."
- ☐ Hugo: "Since \overleftrightarrow{AB} and \overleftrightarrow{BC} are parallel and \overleftrightarrow{DC} and \overleftrightarrow{DA} are parallel, \overleftrightarrow{AB} and \overleftrightarrow{DC} are parallel."

