SIMILAR TRIANGLES

A ANGLE-ANGLE SIMILARITY

A.1 CHOOSING MATHEMATICAL ARGUMENTATION

MCQ 1: Choose the correct mathematical argumentation for why the figures F and F' are similar.



- \Box The triangles look the same.
- \Box Both figures are right triangles with a common marked angle, so the triangles F and F' are similar.
- \Box Both figures are right triangles, so the triangles F and F' are similar.
- \Box Both triangles have the same marked angle, so the triangles F and F' are similar.

MCQ 2: Choose the correct mathematical argumentation for why the figures F and F' are similar.



- \Box The triangles look the same.
- \Box Both figures are right triangles with a common marked angle, so the triangles F and F' are similar.
- \Box Both triangles have the same marked angle, so the triangles F and F' are similar.
- \Box Both triangles have two marked angles in common, so the triangles F and F' are similar.

MCQ 3: Choose the correct mathematical argumentation for why the figures F and F' are similar.



- \Box The triangles look the same.
- \Box Both triangles have a common marked angle and a pair of vertically opposite angles, so the triangles F and F' are similar.
- \Box Both triangles have the same marked angle, so the triangles F and F' are similar.
- \Box Both figures have a pair of vertically opposite angles, so the triangles F and F' are similar.

MCQ 4: Choose the correct mathematical argumentation for why the figures F and F' are similar.



- \Box The triangles look the same.
- \Box Both triangles have a common marked angle and a pair of vertically opposite angles, so the triangles F and F' are similar.
- \Box Since the lines are parallel, the corresponding angles in the two triangles are equal. So, the triangles F and F' are similar.
- \Box Both figures have a pair of vertically opposite angles, so the triangles F and F' are similar.

A.2 WRITING MATHEMATICAL ARGUMENTATION

 $C_{F}^{\mathbf{Ex 5:}}$ Justify with mathematical argumentation why the figures $F_{F}^{\mathbf{Ex 5:}}$ and F' are similar.





Ex 6: Justify with mathematical argumentation why the figures F and F' are similar.







Determine the length of the seat CD.



B THALES'S THEOREM

B.1 APPLYING THALES'S THEOREM WITHOUT JUSTIFICATION

Ex 13: The lines \overleftarrow{GH} and \overleftarrow{EI} intersect at F, and the lines \overrightarrow{GE} and \overrightarrow{HI} are parallel. Given FG = 3 cm, FH = 5 cm, FI = 7 cm, and HI = 9 cm:



Calculate the lengths FE and EG.



Ex 14: \overrightarrow{BE} The lines \overrightarrow{GH} and \overrightarrow{EI} intersect at F, and the lines \overrightarrow{GE} and \overrightarrow{HI} are parallel. Given FG = 3.5 cm, FE = 4.2 cm, EG = 1.5 cm, and HI = 8.5 cm:



Calculate the lengths FI and FH.



Ex 15: A folding stool is modeled geometrically with segments \overline{CB} and \overline{AD} for the metal frame and segment \overline{CD} for the fabric seat. Given CG = DG = 30 cm, AG = BG = 45 cm, and AB = 51 cm, and knowing that the seat \overline{CD} is parallel to the ground represented by \overline{AB} :

Ex 16: The lines \overrightarrow{JK} and \overrightarrow{LM} intersect at N, and the lines \overrightarrow{JL} and \overrightarrow{KM} are parallel. Given JN = 3 cm, NK = 5 cm, LM = 7 cm, and KM = 9 cm:



Calculate the lengths NL and LJ.



B.2 APPLYING THALES'S THEOREM

Ex 17: The lines \overleftrightarrow{GH} and \overleftrightarrow{EI} intersect at F, and the lines \overleftrightarrow{GE} and \overleftrightarrow{HI} are parallel. Given FG = 3 cm, FH = 5 cm, FI = 7 cm, and HI = 9 cm:



Calculate the lengths FE and EG. Justify.





Calculate the lengths NL and LJ. Justify.

Ex 18: The lines \overleftarrow{GH} and \overleftarrow{EI} intersect at F, and the lines \overrightarrow{GE} and \overrightarrow{HI} are parallel. Given FG = 3.5 cm, FE = 4.2 cm, EG = 1.5 cm, and HI = 8.5 cm:



Calculate the lengths FI and FH. Justify.

Ex 20: A folding stool is modeled geometrically with segments \overline{CB} and \overline{AD} for the metal frame and segment \overline{CD} for the fabric seat. Given CG = DG = 30 cm, AG = BG = 45 cm, and AB = 51 cm, and knowing that the seat \overline{CD} is parallel to the ground represented by \overline{AB} :



Calculate the length of the seat CD. Justify.

Ex 19: The lines \overrightarrow{JK} and \overrightarrow{LM} intersect at N, and the lines \overrightarrow{JL} and \overrightarrow{KM} are parallel. Given JN = 3 cm, NK = 5 cm, LM = 7 cm, and KM = 9 cm:

