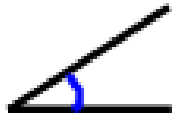
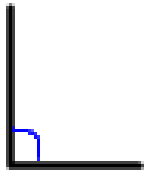
2.1 Exploring Parallel Lines

Types of Angles



Acute angle
$< 90°$



Right Angle
$90°$

Obtuse angle
$90° - 180°$

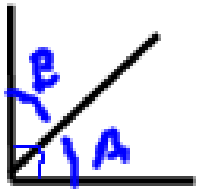
Straight Angle
$180°$

Reflex Angle.
$180° - 360°$

Angle Relationships

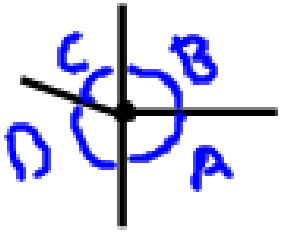
$A+B+C=180^\circ$ Supplementary angles

- angles on one side of a straight line, add to 180°



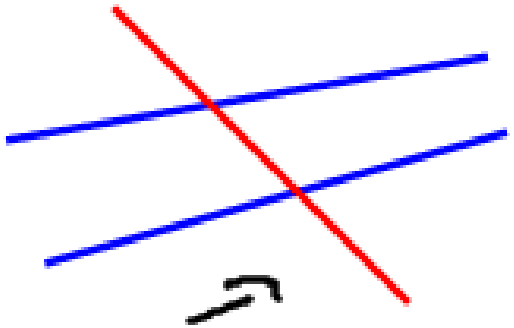
$A+B=90^\circ$ complementary angles

- make up a right angle



- Angles around a point add to 360°

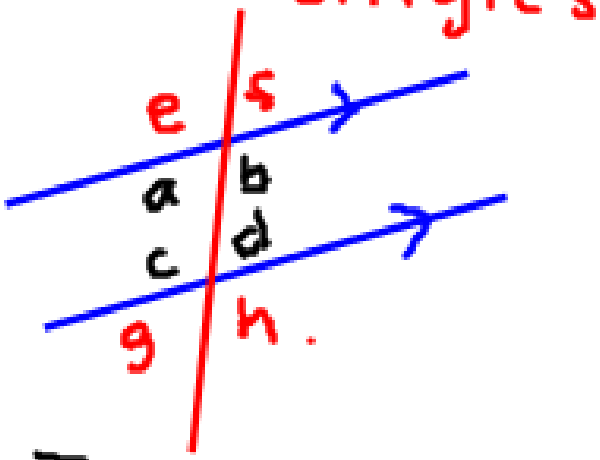
Parallel lines never meet.
- same slope -



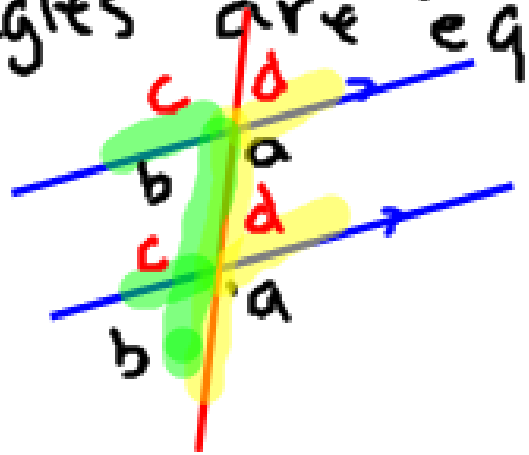
transversal
- a line that intersects two or more other lines.

interior angles

exterior angles



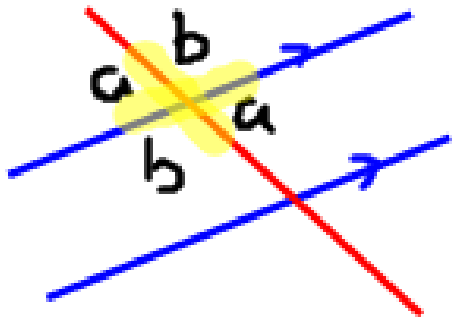
When a transversal intersects a pair of parallel lines the corresponding angles are equal.



corresponding angles

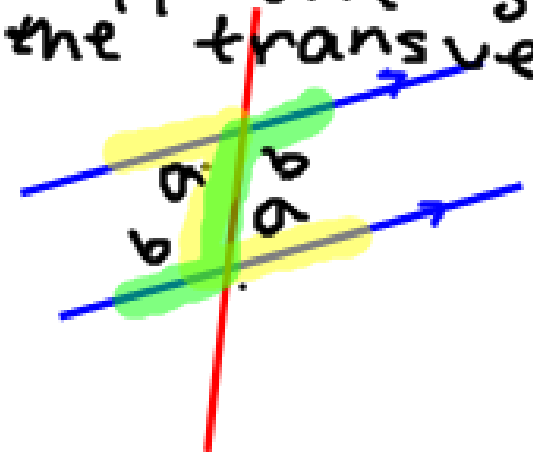
(F-Theorem)

Vertically opposite angles

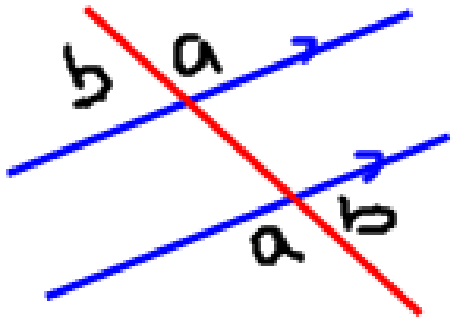


(X-Theorem)

Alternate Interior Angles
- two non-adjacent interior angles on opposite sides of the transversal

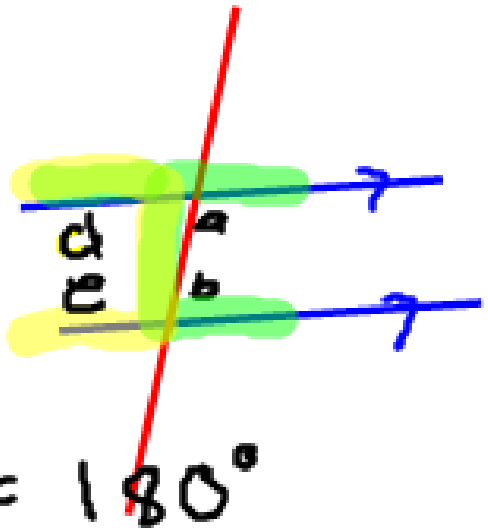


(Z-Theorem)



Alternate Exterior angles - two exterior angles formed between two lines and a transversal, on opposite sides of the transversal.

Same side interior angles or co-interior angles add to 180° (supplementary)



$a + b = 180°$

$d + e = 180°$

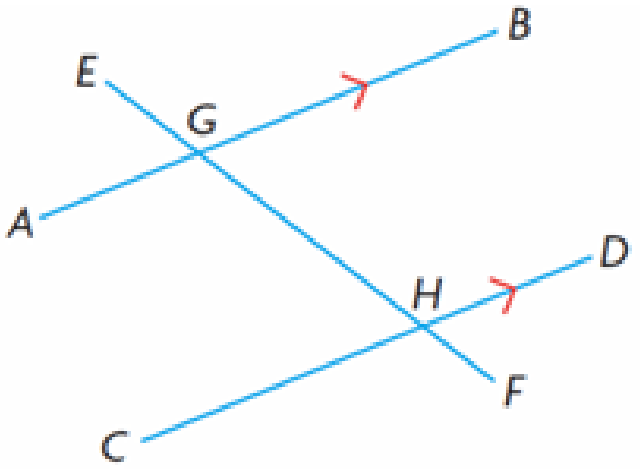
C. Theorem

1. **a)** Identify examples of parallel lines and transversals in this photograph of the High Level Bridge in Edmonton.

   b) Can you show that the lines in your examples really are parallel by measuring angles in a tracing of the photograph? Explain.

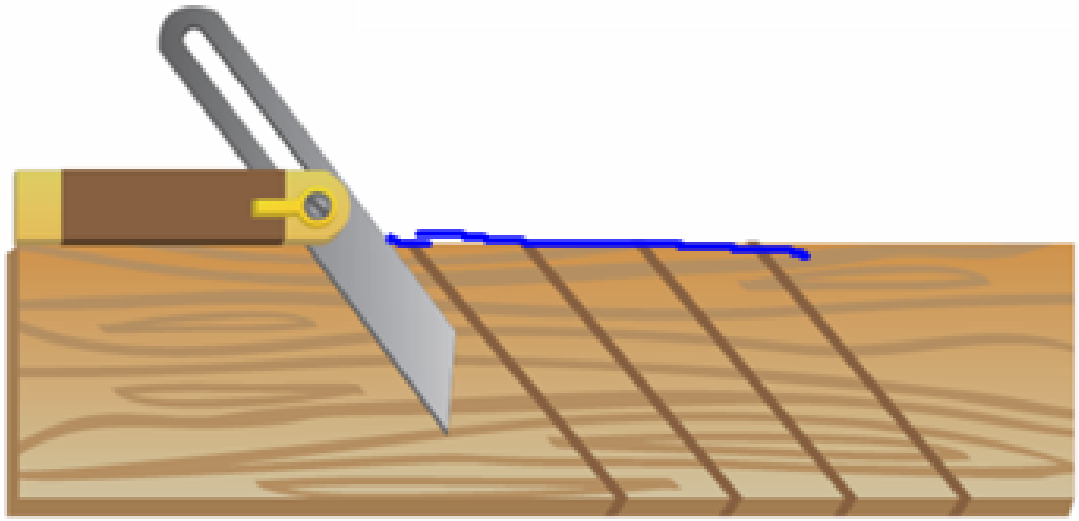
perspective

2. Which pairs of angles are equal in this diagram? Is there a relationship between the measures of the pairs of angles that are not equal?



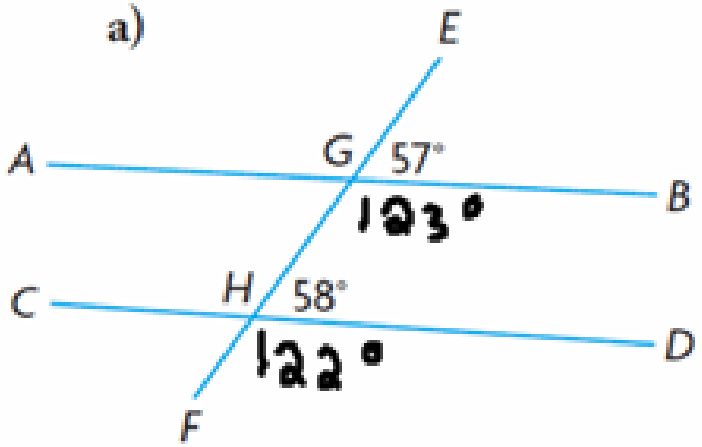
3. Explain how you could construct parallel lines using only a protractor and a ruler.

4. An adjustable T-bevel is used to draw parallel lines on wood to indicate where cuts should be made. Explain where the transversal is located in the diagram and how a T-bevel works.



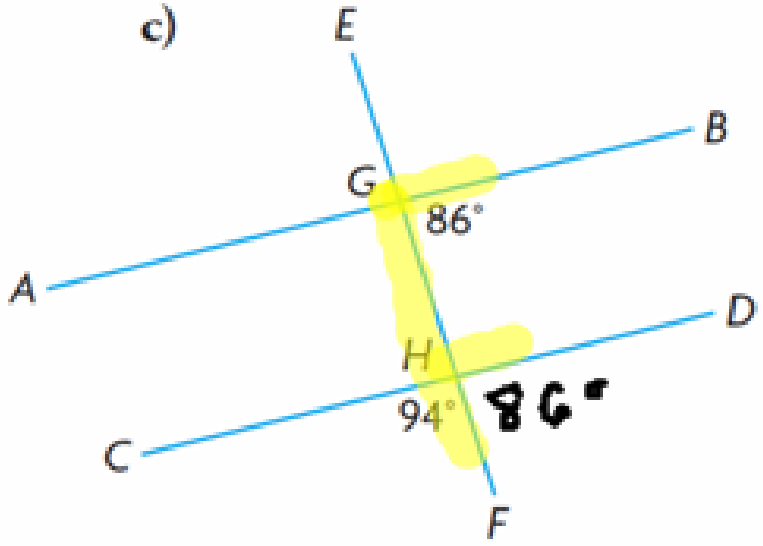
5. In each diagram, is AB parallel to CD? Explain how you know.

a)



Not.

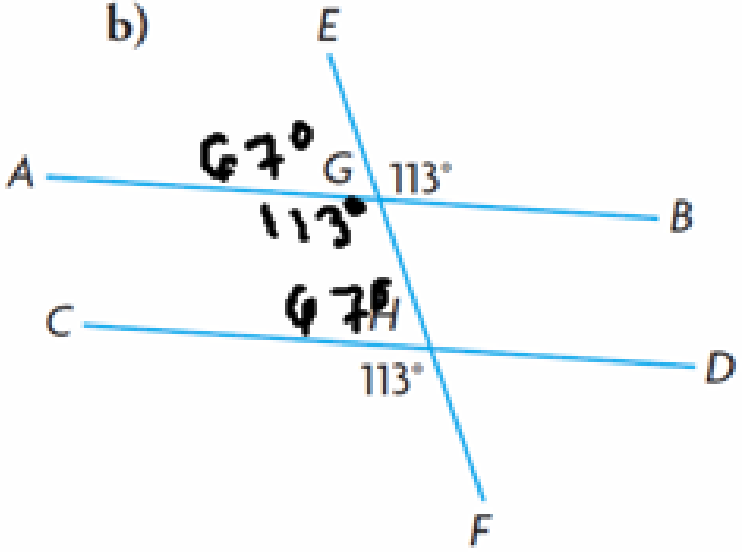
c)



Yes.

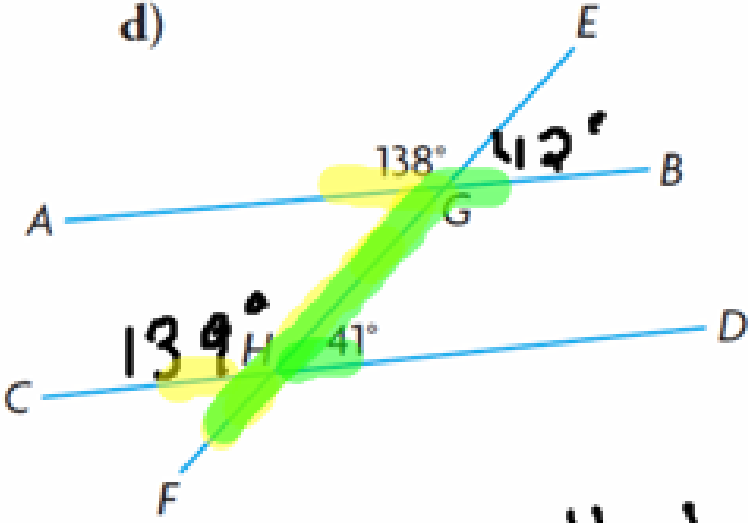
5 - Theorem -

b)



Yes.

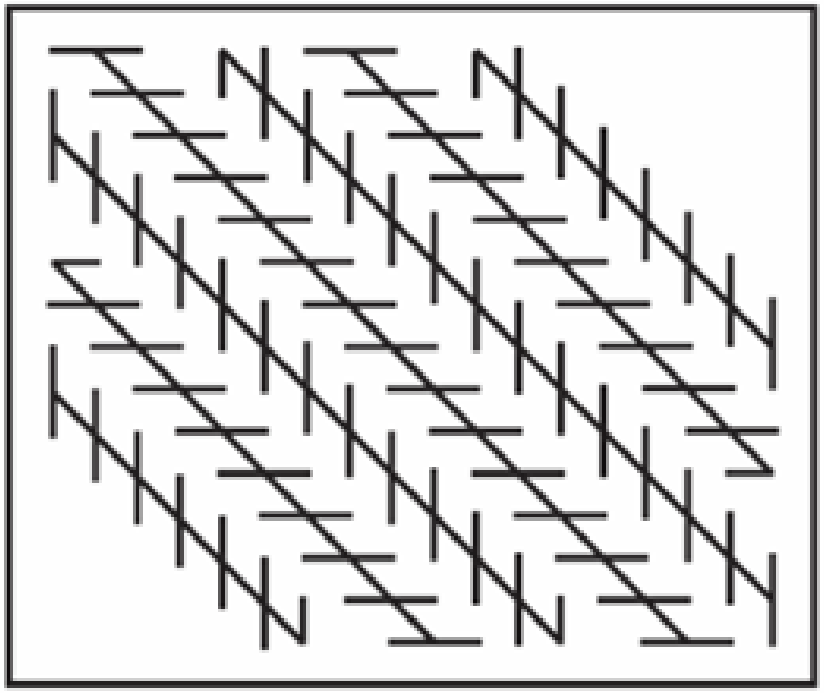
d)



Not parallel.

below.

6. Nancy claims that the diagonal lines in the diagram ~~which~~ are not parallel. Do you agree or disagree? Justify your decision.



Disagree..

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