

Geometry

3.3 and 3.4 Practice

Name

Key

In the figure, $l \parallel m$. Find the measure of each angle.

1. If $m\angle 7 = 100$, find $m\angle 3$. 100°

2. If $m\angle 7 = 95$, find $m\angle 6$. 85°

3. If $m\angle 1 = 120$, find $m\angle 5$. 120°

4. If $m\angle 4 = 20$, find $m\angle 7$. 160°

5. If $m\angle 3 = 140$, find $m\angle 8$. 40°

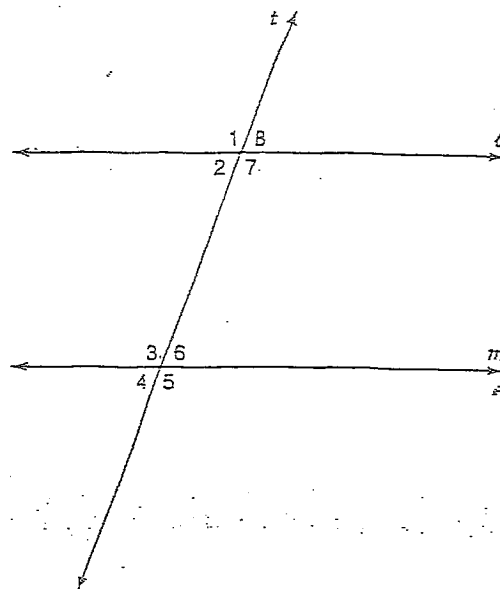
6. If $m\angle 4 = 30$, find $m\angle 1$. 150°

7. If $m\angle 4 = 40$, find $m\angle 2$. 40°

8. If $m\angle 7 = 125$, find $m\angle 4$. 55°

9. If $l \perp t$, find $m\angle 3$. 90°

10. If $m\angle 1 + m\angle 3 = 230$, find $m\angle 6$. 65°
 $= 115 \quad = 115$



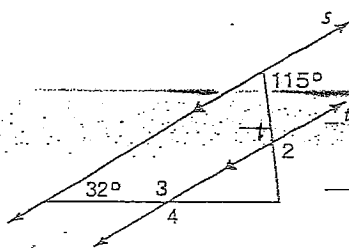
In the figure, $s \parallel t$. Find the measure of each angle.

11. $m\angle 1$ 115°

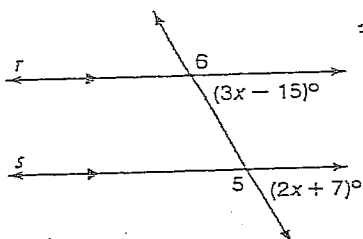
12. $m\angle 2$ 115°

13. $m\angle 3$ 148°

14. $m\angle 4$ 148°



In the figure, $r \parallel s$. Find the value of x .

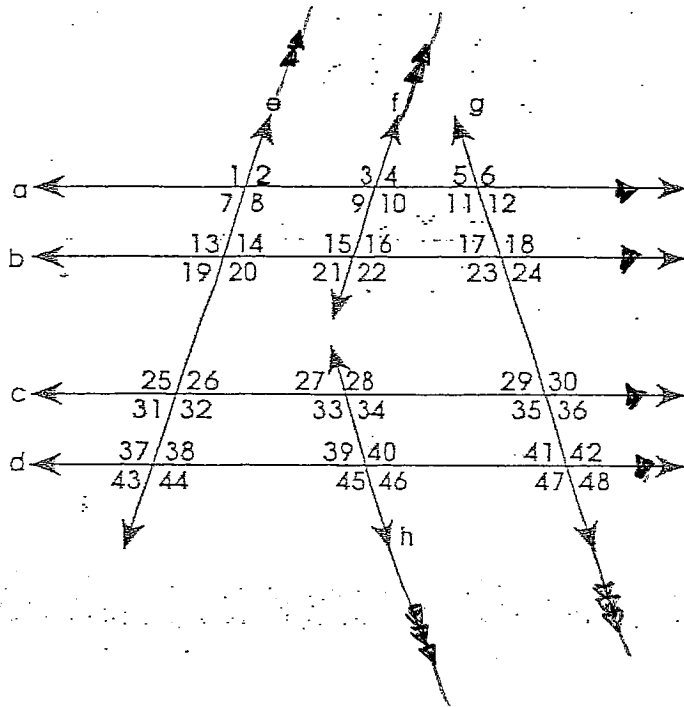


$$\begin{array}{r} 3x - 15 = 2x + 7 \\ -2x \quad -2x \\ \hline \end{array}$$

$$\begin{array}{r} x - 15 = 7 \\ +15 \quad +15 \\ \hline \end{array}$$

$$\boxed{x = 22}$$

Using the diagram below, fill in the blanks. $a \parallel b$, $c \parallel d$, $e \parallel f$, $g \parallel h$



3. If $m\angle 1 = 100^\circ$ then $m\angle 10 =$ 100°

4. If $m\angle 37 = 105^\circ$ then $m\angle 13 =$ 105°

5. If $m\angle 26 = 80^\circ$ then $m\angle 22 =$ 100°

6. If $m\angle 5 = 70^\circ$ then $m\angle 17 =$ 70

7. If $m\angle 12 = 65^\circ$ then $m\angle 35 =$ 115°

8. If $m\angle 14 = 85^\circ$ then $m\angle 21 =$ 85°

9. If $m\angle 46 = 73^\circ$ then $m\angle 41 =$ 73°

10. If $m\angle 23 = 132^\circ$ then $m\angle 6 =$ 132°

11. If $m\angle 22 = 120^\circ$ then $m\angle 19 =$ 60°

12. If $m\angle 4 = 55^\circ$ then $m\angle 22 =$ 125°

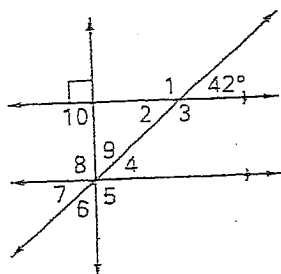
13. If $m\angle 27 = 80^\circ$ then $m\angle 46 =$ 80°

14. If $m\angle 37 = 104^\circ$ then $m\angle 32 =$ 104°

15. If $m\angle 19 = 76^\circ$ then $m\angle 22 =$ 104°

Find the measure of each angle numbered 1 - 10.

1.

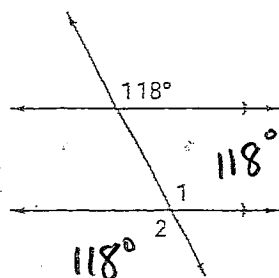


$$\begin{aligned} m\angle 1 &= 138^\circ \\ m\angle 2 &= 42^\circ \\ m\angle 3 &= 138^\circ \\ m\angle 4 &= 42^\circ \\ m\angle 5 &= 90^\circ \end{aligned}$$

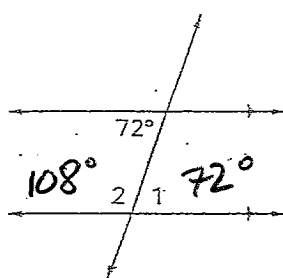
$$\begin{aligned} m\angle 6 &= 48^\circ \\ m\angle 7 &= 42^\circ \\ m\angle 8 &= 90^\circ \\ m\angle 9 &= 48^\circ \\ m\angle 10 &= 90^\circ \end{aligned}$$

Find $m\angle 1$ and $m\angle 2$.

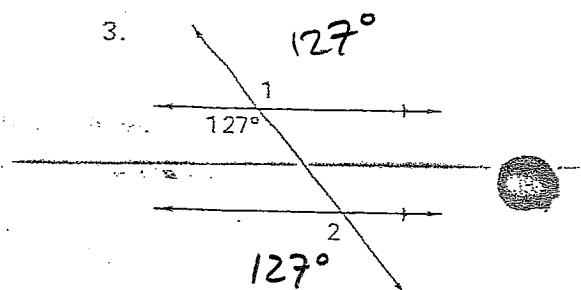
1.



2.

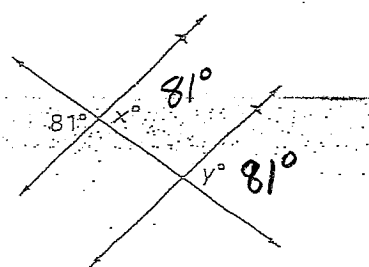


3.

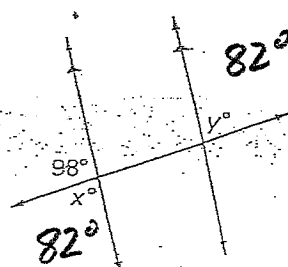


Find the values of x and y .

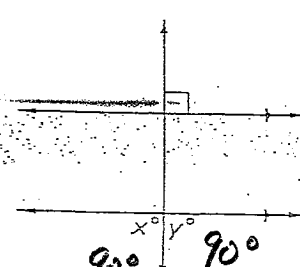
4.



5.

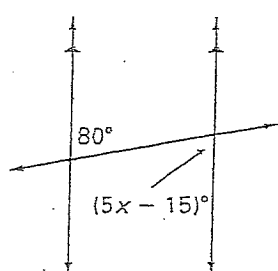


6.



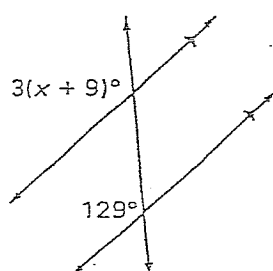
Find the value of x .

7.



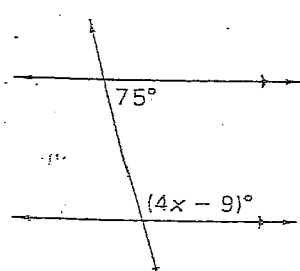
$$\begin{aligned} 5x - 15 &= 80 \\ 5x &= 95 \\ x &= 19 \end{aligned}$$

8.



$$\begin{aligned} 3x + 27 &= 129 \\ 3x &= 102 \\ x &= 34 \end{aligned}$$

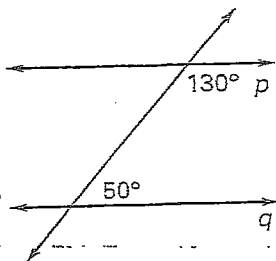
9.



$$\begin{aligned} 75 + 4x - 9 &= 180 \\ 4x + 66 &= 180 \\ 4x &= 114 \\ x &= \frac{114}{4} \\ x &= \frac{57}{2} \end{aligned}$$

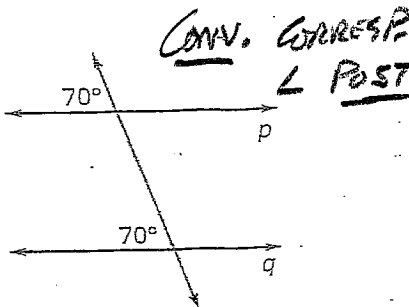
Is it possible to prove that lines p and q are parallel? If so, explain how.

1.



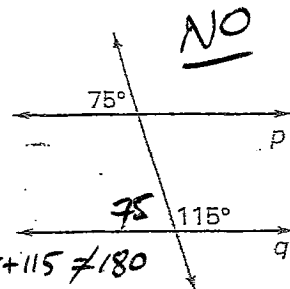
CONV. CONSEC.
INT L THM

2.



CONV. CORRESP
L POST

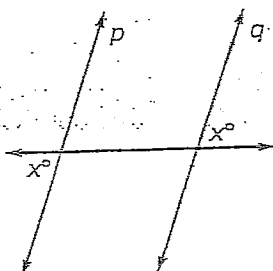
3.



NO

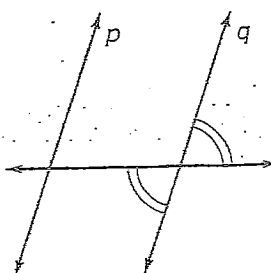
$$75 + 115 \neq 180$$

4.



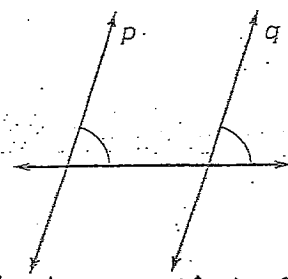
CONV. ALT
EXT. L THM

5.



NO

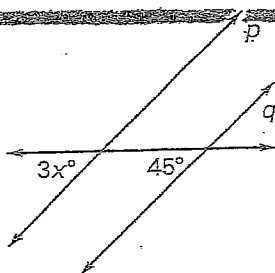
6.



CONV. CORRESPONDING
L POST

Find the value of x that makes $p \parallel q$.

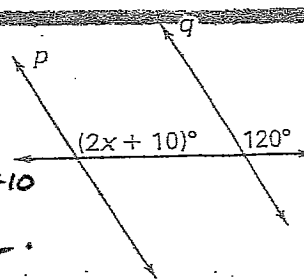
7.



$$3x = 45$$

$$x = 15$$

8.

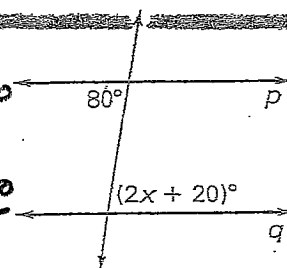


$$120 = 2x + 10$$

$$110 = 2x$$

$$x = 55$$

9.



$$80 = 2x + 20$$

$$60 = 2x$$

$$x = 30$$

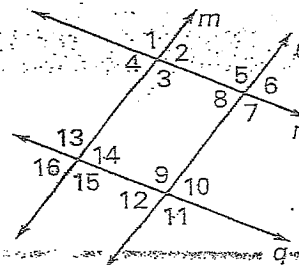
Use the diagram and the given information to determine which lines are parallel.

10. $\angle 13 \cong \angle 11$ $m \parallel l$

11. $\angle 4 \cong \angle 8$ $m \parallel l$

12. $\angle 16 \cong \angle 2$ $n \parallel g$

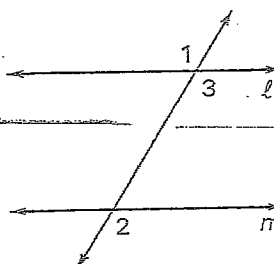
13. $\angle 7 \cong \angle 9$ $n \parallel g$



14. Complete the two-column proof of the Alternate Exterior Angles Converse Theorem.

Given: $\angle 1 \cong \angle 2$

Prove: $l \parallel m$



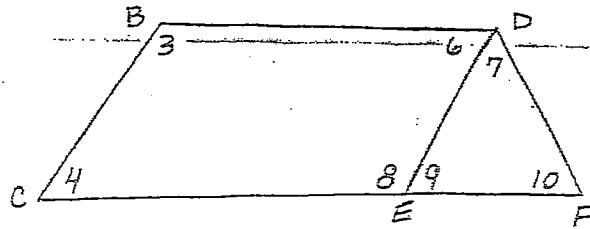
Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. <u>GIVEN</u>
2. $\angle 1 \cong \angle 3$	2. <u>VAT</u>
3. $\angle 2 \cong \angle 3$	3. <u>TRANS/SUBSTIT.</u>
4. $l \parallel m$	4. <u>CONV CORR L POST</u>

Chapter 3 Proof Practice

5

1. Given: $\angle 6 \cong \angle 9$

Prove: $\angle 3$ and $\angle 4$ are supplementary.



Statements

1. $\angle 6 \cong \angle 9$

2. $\overline{BD} \parallel \overline{CE}$

3. $\angle 3$ and $\angle 4$ are supplementary

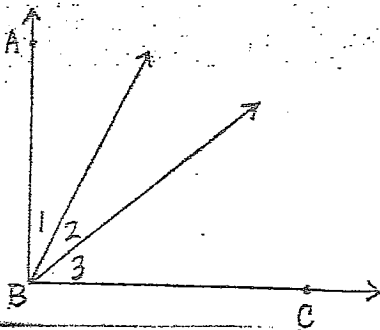
Reasons

1. GIVEN
2. CONV ALT INT \angle THM
3. CONSECUTIVE INT \angle THM

2. Given: $m\angle 1 = m\angle 3 = 37^\circ$

$\overrightarrow{BA} \perp \overrightarrow{BC}$

Prove: $m\angle 2 = 16^\circ$



Statements

1. $m\angle 1 = m\angle 3 = 37^\circ$

2. $\overrightarrow{BA} \perp \overrightarrow{BC}$

3. $\angle ABC$ is a right angle.

4. $m\angle ABC = 90^\circ$

5. $m\angle ABC = m\angle 1 + m\angle 2 + m\angle 3$

6. $90^\circ = m\angle 1 + m\angle 2 + m\angle 3$

7. $90^\circ = 37^\circ + m\angle 2 + 37^\circ$

8. $16^\circ = m\angle 2$

9. $m\angle 2 = 16^\circ$

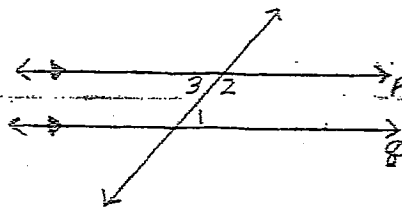
Reasons

1. GIVEN
2. GIVEN
3. DEF \perp LINES
4. DEF RT \angle
5. \angle + Post
6. SUBSTITUTION / TRANS
7. SUBSTITUTION
8. SUBTRACTION PROP =
9. SYMMETRY

3.

Given: $p \parallel q$

Prove: $\angle 1$ and $\angle 2$ are supplementary.



Statements

Reasons

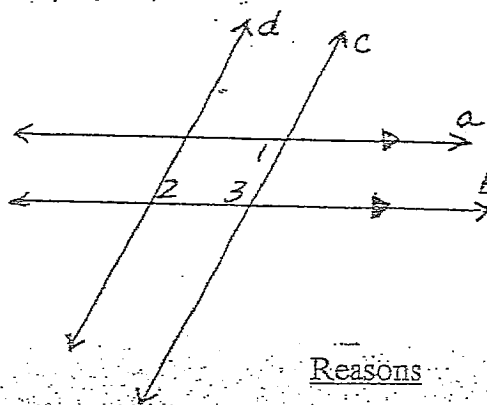
1. $p \parallel q$
2. $\angle 1 \cong \angle 3$
3. $m\angle 1 = m\angle 3$
4. $\angle 2$ and $\angle 3$ form a linear pair.
5. $m\angle 3 + m\angle 2 = 180^\circ$
6. $m\angle 1 + m\angle 2 = 180^\circ$
7. $\angle 1$ and $\angle 2$ are supplementary

1. GIVEN
2. ALT INT \angle THM
3. DEF \cong
4. DEF LINEAR PAIR
5. LINEAR PAIR POST
6. CONSECUTIVE INT \angle THM
7. DEF SUPPLEMENTARY

4.

Given: $a \parallel b$, $\angle 1 \cong \angle 2$

Prove: $c \parallel d$



Statements

Reasons

1. $a \parallel b$
2. $\angle 1$ and $\angle 3$ are supplementary
3. $m\angle 1 + m\angle 3 = 180^\circ$
4. $\angle 1 \cong \angle 2$
5. $m\angle 1 = m\angle 2$
6. $m\angle 2 + m\angle 3 = 180^\circ$
7. $c \parallel d$

1. GIVEN
2. CONSECUTIVE INT \angle THM
3. DEF SUPPLEMENTARY
4. GIVEN
5. DEF \cong
6. SUBSTITUTION
7. CONVERSE CONSEC. INT \angle THM