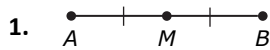


**LESSON 84** .....



2. sometimes
3. 1 line; See the Parallel Postulate [7.8].
4. Use the Segment Addition Postulate [7.6].  
 $DE + EF = DF$   
 $x + 2x = 18; x = 6$   
 $DE = x = 6$
5.  $100^\circ$  and  $(x + 35)^\circ$  are congruent as vertical angles.  
 $x + 35 = 100; x = 65$
6.  $x$  and  $118^\circ$  are supplementary.  
 $x = 180 - 118 = 62$   
 $x$  and  $y$  are congruent as alternate interior angles.  
 $y = x = 62$
7. interior angle sum of a triangle = 180  
 $3x + 2x + 105 = 180; x = 15$
8. interior angle sum of a pentagon =  $180(5 - 2) = 540^\circ$   
 $x + 95 + 102 + 123 + 98 = 540; x = 122$
9. 4 lines of symmetry  
 angle of rotational symmetry =  $90^\circ$
10. The translation maps  $P(2, -6)$  to  $P'(-1, 0)$ .  
 The reflection maps  $P'(-1, 0)$  to  $P''(0, -1)$ .  
 So, the final image is  $(0, -1)$ .

11 ~ 12. *Answers may vary. Samples are given.*

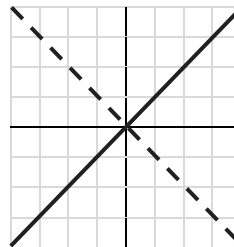
11. a reflection over the  $x$ -axis followed by a translation of 6 units left and 1 unit up
12. a reflection over the  $y$ -axis followed by a dilation about the origin by scale factor 2
13. Each time the numerator doubles. The next two terms are  $1/32$  and  $1/64$ .
14. Each figure has one more square horizontally than the previous figure. The next two figures are:



15. Assume  $x < 4$  is false. Then  $x \geq 4$ . Use algebra to try to make  $x \geq 4$  equal to the given statement. Multiplying each side by 2 and adding 7 would produce  $2x + 7 \geq 15$ . This contradicts the given statement that  $2x + 7 < 15$ . Therefore, our assumption is wrong and  $x < 4$  is true.
16. Assume  $\angle 1$  and  $\angle 2$  are both obtuse. An obtuse angle is greater than  $90^\circ$ . So if  $\angle 1$  and  $\angle 2$  are both obtuse, then they add up to greater than  $180^\circ$ . This contradicts the given statement that  $\angle 1$  and  $\angle 2$  are supplementary angles which add up to  $180^\circ$ . Therefore,  $\angle 1$  and  $\angle 2$  cannot be both obtuse.

17. 2. If lines are  $\parallel$ , then alternate interior angles are  $\cong$ .  
 3. Def. of congruent angles  
 5. Substitution Property
18.  $\triangle ABC \cong \triangle ADC$  by SSS.
19.  $\triangle DEG \cong \triangle FEG$  by ASA.
20.  $\triangle HIJ \cong \triangle JKH$  by HL.
21.  $\triangle PEF \cong \triangle PGH$  by SAS.
22. Congruent triangles have congruent angles.  
 $m\angle HEG = m\angle FGE = 28^\circ$   
 Angles in a triangle add up to  $180^\circ$ .  
 $28 + 4x + 104 = 180; x = 12$
23. Base angles of an isosceles triangle are congruent.  
 $m\angle U = m\angle T = 5x^\circ$   
 Angles in a triangle add up to  $180^\circ$ .  
 $10x + 5x + 5x = 180; x = 9$

24.  $y = -x$



25.  $(2, 0)$

