

# Chapter 3 Geometry Practice Answers // Mr. Fitch

## p143 #8, 10-16, 21-24, 29, 49 [37-42]

7 points each

8. If lines are not coplanar, then they do not intersect but they are not parallel.
10. Carly; the lines are coplanar since they are both in plane  $ABH$ , so  $\overline{AB} \parallel \overline{HG}$ .
11. plane  $JCD \parallel$  plane  $ELH$
12.  $\overline{FG}$
13.  $\overline{GB}$ ,  $\overline{JE}$ ,  $\overline{CL}$ ,  $\overline{FA}$
14. Answers may vary. Sample:  
 $\overline{AB}$ ,  $\overline{BH}$
15.  $\overline{GB}$ ,  $\overline{DH}$ ,  $\overline{CL}$
16. plane  $JCD$

21.  $\angle 1$  and  $\angle 2$  are corresp. angles;  $\angle 3$  and  $\angle 4$  are alt. int. angles;  $\angle 5$  and  $\angle 6$  are corresp. angles
22.  $\angle 1$  and  $\angle 2$  are same-side int. angles;  $\angle 3$  and  $\angle 4$  are corresp. angles;  $\angle 5$  and  $\angle 6$  are corresp. angles
23.  $\angle 1$  and  $\angle 2$  are corresp. angles;  $\angle 3$  and  $\angle 4$  are same-side int. angles;  $\angle 5$  and  $\angle 6$  are alt. int. angles
24. corresp. angles
29. skew; Answers may vary. Sample:  
Since the paths are not coplanar, they are skew.
49. B

Bonus Answers revealed in class. These are worth +4 CC Points total.

## p153 #8-10, 12, 13, 16-18, 22, 30, 32 [19, 20, 24]

9 points each

8.  $\angle 7$  (vert. angles),  $\angle 4$  (alt. int. angles),  $\angle 5$  (corresp. angles)
9.  $\angle 3$  (alt. int. angles),  $\angle 1$  (corresp. angles)
- 10a. If two lines are cut by a transversal, then the same-side int. angles are suppl.
- 10b. If two lines are cut by a transversal, then the same-side int. angles are suppl.
- 10c. If two angles are suppl. to the same angle, then they are  $\cong$ .
12.  $m\angle 1 = 75$  because corresp. angles are  $\cong$ ;  $m\angle 2 = 105$  because  $\angle 2$  forms a linear pair with the given angle.
13.  $m\angle 1 = 120$  because  $\angle 1$  is a corresp. angle with a  $120^\circ$  angle;  $m\angle 2 = 60$  because  $\angle 2$  forms a linear pair with a  $120^\circ$  angle.
16.  $x = 25$ ;  $x + 40 = 65$ ;  $3x - 10 = 65$
17.  $x = 20$ ;  $4x = 80$ ;  $5x = 100$
18. 32

22. A; the marked angles are the same-side int. angles, so they are suppl.
30. 192 feet
32. 14

Bonus Answers revealed in class.

**p160 #6, 7, 8, 10, 12-14, 16-26, 32, 49 [27, 28]****7 points each**

6.  $\overline{DC}$  is the transversal, so the two same-side int.  $\angle$ s show that  $\overline{AD}$  and  $\overline{BC}$  are parallel.
7.  $\overline{BE} \parallel \overline{CG}$  ( $\overline{EG}$  is a transversal that forms  $\cong$  corresp. angles.)
8.  $\overline{PS} \parallel \overline{QT}$  ( $\overline{PQ}$  is a transversal that forms  $\cong$  corresp. angles.)
10.  $\overline{KR} \parallel \overline{MT}$  ( $\overline{JM}$  is a transversal that forms  $\cong$  corresp. angles.)
12. Yes;  $\angle 1$  and  $\angle 2$  are alt. ext. angles, and if alt. ext. angles are  $\cong$ , then the lines are  $\parallel$ .
13. 30
14. 50
16. 31
17.  $a \parallel b$ ; if same-side int. angles are suppl., then the lines are  $\parallel$ .
18.  $a \parallel b$ ; Converse of Corresp. Angles Post.
19.  $a \parallel b$ ; if same-side int. angles are suppl., then the lines are  $\parallel$ .
20. none
21. none
22.  $\ell \parallel m$ ; Converse of the Corresp. Angles Post.
23.  $a \parallel b$ ; if alt. ext. angles are  $\cong$ , then the lines are  $\parallel$ .
24.  $a \parallel b$ ; Converse of the Corresp. Angles Post.
25. none
26.  $l \parallel m$ ; Converse of Alt. Int. Angles Thm.
32.  $x = 5$   
 $m\angle 1 = 50$   
 $m\angle 2 = 50$
49. C

**Bonus Answers  
 revealed in class.**
**p167 #1, 2, 5, 6, 11-13, 19-21, 28, 29, 30, 36-39****5 points each**

1. They are  $\perp$ ; using Main Street as a transversal, Avenue B  $\perp$  Main Street by  $\perp$  Transversal Thm.
2.  $a \parallel b$ ; in a plane, if two lines are  $\perp$  to the same line, then they are  $\parallel$ .
5. The diagram should show that  $m$  and  $r$  are  $\perp$ .
- 6a.  $\angle 1 \cong \angle 2 \cong \angle 3$
- 6b. Yes; pieces B and C are  $\parallel$ , and if a line is  $\perp$  to one of several  $\parallel$  lines, it is  $\perp$  to all of the  $\parallel$  lines.
11. The rungs are  $\parallel$  to each other because they are all  $\perp$  to the same side.
12. All of the rungs are  $\perp$  to one side. The side is  $\perp$  to the top rung, and because all of the rungs are  $\parallel$  to each other, the side is  $\perp$  to all of the rungs.
13. The rungs are  $\perp$  to both sides. The rungs are  $\perp$  to one of two  $\parallel$  lines, so they are  $\perp$  to both lines.
19.  $a \parallel d$  (Transitive Prop. of  $\parallel$  Lines)
20.  $a \perp d$  ( $\perp$  Transversal Thm.)
21.  $a \perp d$  ( $\perp$  Transversal Thm.)
28. F
29. C
30. The perimeter of the square is 16 cm, so each side is 4 cm. The length of the side of the square is equal to the diameter of the circle. So the diameter is 4 cm. Using the formula, the circumference is  $C = \pi d = 4\pi$ .
36. 60
37. 20
38. 40
39. 58

**p175 #1, 8-11, 13-15, 19-22, 27-30 [4, 34]**

**6 points each**

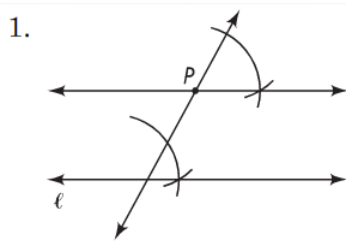
1. 58
8. A; the three int. angles have measure 30,  $x$ , and  $3x$ , so the first line should state that the sum of those three measures is 180.
9. 30
10. 83.1
11. 90
13.  $x = 80$   
 $y = 80$
14.  $c = 60$
- 15a.  $\angle 5, \angle 6, \angle 8$
- 15b. For  $\angle 5$ :  $\angle 1$  and  $\angle 3$ ; for  $\angle 6$ :  $\angle 1$  and  $\angle 2$ ; for  $\angle 8$ :  $\angle 1$  and  $\angle 2$
- 15c.  $\angle 6 \cong \angle 8$

19.  $m\angle 3 = 92$   
 $m\angle 4 = 88$
20.  $b = 18$   
 $a = 162$
21. 114
22. 30, 60
27. 60; answers may vary. Sample:  
 $180 \div 3 = 60$ , so each angle measures 60.
28. III
29.  $x = 37$   
 $m\angle Q = 78$   
 $m\angle P = 65$   
 $m\angle R = 37$
30.  $x = 7$   
 $m\angle A = 35$   
 $m\angle B = 55$   
 $m\angle C = 90$

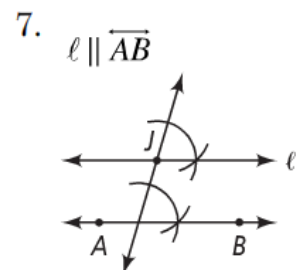
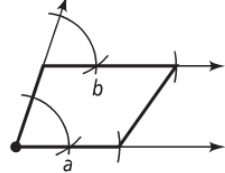
**Bonus Answers  
revealed in class.**

**p186 #1, 7-9, 11, 12, 29, 45-47 [42]**

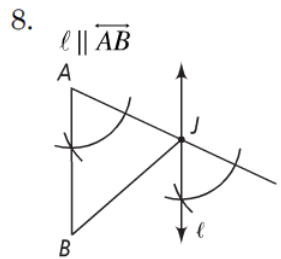
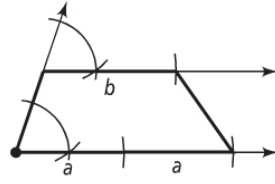
**10 points each**



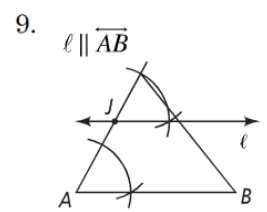
11. Constructions may vary. Sample:



12. Constructions may vary. Sample:



- 29a. II, IV, III, I
- 29b. III; points C and G; I: the intersection of the transversal with the arcs from Step III.
45.  $\frac{1}{2}$
46. 1
47. -2



**Bonus Answers  
revealed in class.**

1. 5
2. -2
3.  $y = 8x + 10$

4.  $y - 3 = 4(x - 3)$

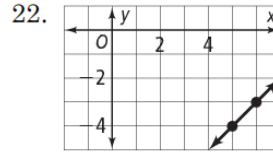
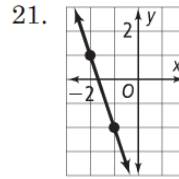
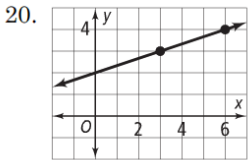
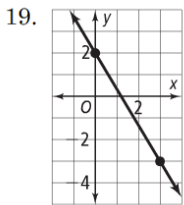
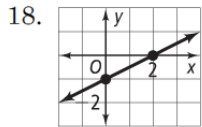
5. Answers may vary. Sample:  
 The slope-intercept form  $y = mx + b$  uses the slope  $m$  and the  $y$ -intercept  $b$ ; the point-slope form  $y - y_1 = m(x - x_1)$  uses the point  $(x_1, y_1)$  and the slope  $m$ .

6. The lines have the same  $y$ -int., but one line has a steep positive slope and the other has a less steep negative slope.

7. Your classmate switched the  $x$ - and  $y$ -values in the equation for slope. The slope of the line is undefined.

11.  $-\frac{3}{2}$

15. undefined



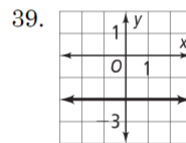
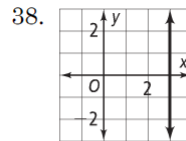
25.  $y = \frac{1}{2}x - 5$

29.  $y - 6 = -(x + 2)$  or  $y - 3 = -(x - 1)$

30.  $y = \frac{3}{5}x + 5$

31.  $y - 2 = -\frac{1}{2}(x - 6)$      $y - 4 = -\frac{1}{2}(x - 2)$

35. horizontal:  $y = -2$ ; vertical:  $x = 3$



45.  $y = -x + 2$

47.  $y = -\frac{3}{2}x + 5$

64. B

68. Yes. If the sum of two numbers is 180 and one of them is less than 90, then the other must be greater than 90.

**p201 #5, 9, 11, 13-16, 19, 20, 22, 52, 55 [29, 34, 43]**

**8 points each**

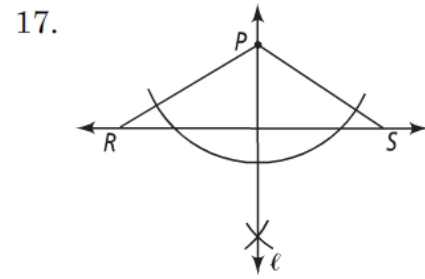
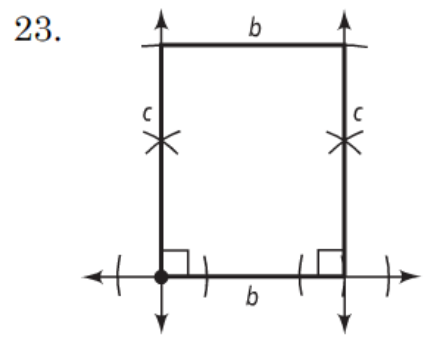
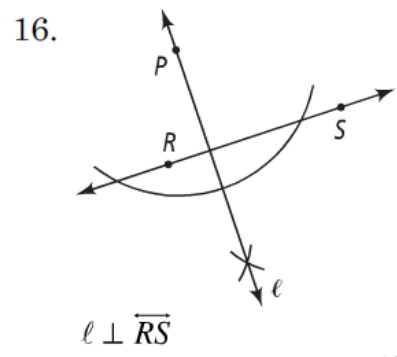
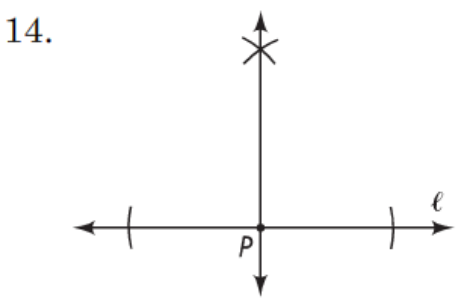
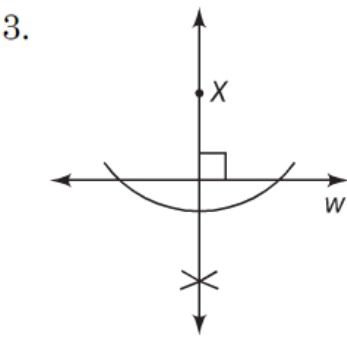
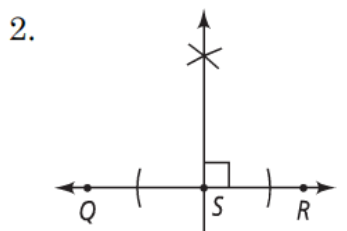
5. The second line should say “slope of parallel line is 3” because  $\parallel$  lines have equal slopes.
9. No; the slope of  $\ell_1$  is  $\frac{3}{2}$  and the slope of  $\ell_2$  is 2. The slopes are not equal, so the lines are not  $\parallel$ .
11.  $y = -2x + 3$
13.  $y - 4 = \frac{1}{2}(x + 2)$
14.  $y + 2 = -\frac{3}{2}(x - 6)$

15. Yes; the slope of  $\ell_1$  is  $-\frac{1}{2}$  and the slope of  $\ell_2$  is 2. Since the product of their slopes is  $-1$ , the lines are  $\perp$ .
16. Yes; the slope of  $\ell_1$  is  $-\frac{3}{2}$  and the slope of  $\ell_2$  is  $\frac{2}{3}$ . Since the product of their slopes is  $-1$ , the lines are  $\perp$ .
19.  $y - 6 = -\frac{3}{2}(x - 6)$
20.  $y = -2(x - 4)$
22.  $y = \frac{4}{3}x$
52. 25
55.  $y + 2 = \frac{3}{4}(x - 3)$  or  $y + 8 = \frac{3}{4}(x + 5)$

Bonus Answers revealed in class.

**p186 #2, 3, 14, 16, 17, 23, 40, 41, 43**

**10 points each**



40. D
41. I
43.  $3y = 120, y - 15 = 25$

23. Yes; both slopes are  $-1$  so the lines are  $\parallel$ .
24. No; the slopes are  $7$  and  $-7$ , so the lines are not  $\parallel$ .
25. No; the slopes are  $-\frac{3}{4}$  and  $-3$ , so the lines are not  $\parallel$ .
26. Yes; both slopes are  $-\frac{2}{5}$ , so the lines are  $\parallel$ .
27.  $-4$
28. Answers may vary. Sample:  
 $y = x + 1$  and  $y = -x + 1$ ;  $y = 2x + 1$  and  $y = -\frac{1}{2}x + 1$
35. A
36. Yes; the slopes are  $-1$  and  $1$  and the product of those slopes is  $-1$ .
38. No; the slopes are  $\frac{2}{7}$  and  $-\frac{7}{4}$ , and the product of those two numbers is not  $-1$ .
60. Yes;  $\angle 1$  and  $\angle 2$  are vert. angles., and vert. angles are  $\cong$ .
61. Yes; each of  $\angle 1$  and  $\angle 2$  is a rt. angle, and all rt. angles are  $\cong$ .
62. No;  $m\angle 1 = 54$  (Given)  
and  $m\angle 2 = 90 - 54 = 36$  (because  $\angle 1$  and  $\angle 2$  are compl.)