IM1H Book 1 Selected Answers

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1. (a) $A_{ABCD} = 25,\ A_{BCEF} = 9$
   (b) –
   (c) –
   (d) $A = 34$
   (e) $l = \sqrt{34}$
   (f) –
2. $l = 4\sqrt{5}$
3. Yes
4. –
5. –
6. $AB = \sqrt{41}$
7. $l = 5\sqrt{2}$
8. $l = \sqrt{5},$ No
9. 12
10. $(12, 2), (2, 2)$
11. No
12. $d = 10\sqrt{2}$
13. (a) $C = (5, 0)$. Answers may vary.
    (b) $D = (5, 1)$. Answers may vary.
    (c) $x = 5$
    (d) –
14. (a) 13, 17, 13, 17
    (b) –

15. (a) $AP = BP = 2\sqrt{5}$
    (b) $(3,5), (2,2), (4,8)$. Answers may vary.
    (c) No
    (d) $y = 3(x-2)+2$

16. $(10,3), (-6,3)$

17. –

18. (a) $(0,0), (6,0)$. Answers may vary.
    (b) $(0,4), (4,2)$. Answers may vary.
    (c) $(0,4), (2,2)$. Answers may vary.

19. $AB = BC = \sqrt{10}$

20. $C = (6,3)$. Infinite. Answers may vary for C.

21. $(0,0), (\sqrt{13},0)$. Answers may vary.

22. $(0,0), (2,3)$

23. $(0,0), (\sqrt{13},0), (2+\sqrt{13},3), (\sqrt{13},6), (0,6), (-2,3)$. Answers may vary.

24. $24-12\sqrt{2},\ 24\sqrt{2}-24$

25. There are an infinite number of different ways.

26. 208m

27. $AP = BP = 5\sqrt{2}$.
    2 more equidistant points: $Q = (2,2),\ R = (5,3)$. Answers may vary.
    All equidistant points: $y = \frac{1}{3}(x-2)+2$.

28. Short leg: $21-7\sqrt{5}$
    Long leg: $42-14\sqrt{5}$
    Hypotenuse: $21\sqrt{5}-35$

29. $\frac{5}{12}$

30. $(0, 5+4\sqrt{2}), (0, 5-4\sqrt{2})$

31. (a) $(0,0), (4,1)$. Answers may vary.
    (b) No.

32. Yes.

33. (a) Yes.
    (b) $\overline{KL}$
    (c) $\angle KLM$

(d) $\angle BAC$

(e) They're congruent.

34. They sum to 90°.

35. It's a right angle.

36. (a) –

    (b) $\frac{b}{a}$ is the negative reciprocal of $\frac{-a}{b}$.

37. –

38. –

39. A line with an undefined slope is perfectly vertical while a line with a slope of 0 is perfectly horizontal.

40. $n = \frac{49}{4}$

41. $x = 1$. Answers may vary.

42. $y = 1$. Answers may vary.

43. They're the same line. $-50x + 30y = 90$.

44. –

45. No.

46. (a) $y = \frac{1}{2}(x - 5) + 5$

    (b) $4x - 5y = 8$

47. Yes.

48. $\left(\frac{15}{8}, \frac{15}{8}\right)$

49. $m = -1$

50. Yes.