Solutions

1. **Solution:** $AC = AB + BC = 1.8 + 2.4 = 4.2$ miles.

2. **Solution:** $AC = |9 - (-5)| = 14$. So $(2x + 1) + (3x - 5) = 14 \Rightarrow 5x - 4 = 14 \Rightarrow 5x = 18 \Rightarrow x = \frac{18}{5} = 3.6$.
Then $AB = 2x + 1 = 8.2$. Since $A = -5$ and B is to the right, $B = -5 + 8.2 = 3.2$.

3. **Solution:** $AC = |-6 - 12| = 18$. So $(4 + k) + 2k = 18 \Rightarrow 4 + 3k = 18 \Rightarrow 3k = 14 \Rightarrow k = \frac{14}{3}$.
Then $AB = 4 + k = \frac{26}{3}$. From $A = 12$ moving left: $B = 12 - \frac{26}{3} = \frac{36-26}{3} = \frac{10}{3} \approx 3.333$.

4. **Solution:** $d = \sqrt{(9 - (-3))^2 + (-8 - 4)^2} = \sqrt{12^2 + (-12)^2} = \sqrt{144 + 144} = 12\sqrt{2}$.

5. **Solution:** $\sqrt{(x - 2)^2 + (1 - 5)^2} = 10 \;\Rightarrow\; (x - 2)^2 + 16 = 100 \Rightarrow (x - 2)^2 = 84$.
So $x - 2 = \pm\sqrt{84} = \pm 2\sqrt{21}$, hence $\boxed{x = 2 \pm 2\sqrt{21}}$.

6. **Solution:** $P = A + \frac{3}{4}(B - A) = -6 + \frac{3}{4}(16) = -6 + 12 = 6$.

7. **Solution:** $P = A + \frac{1}{5}(B - A) = -3 + \frac{1}{5}(12) = -3 + 2.4 = -0.6$.

8. **Solution:** $P = A + 0.60(B - A) = 2 + 0.60(12) = 2 + 7.2 = 9.2$.

9. **Solution:** $P = A + \frac{3}{3+5}(B - A) = 2 + \frac{3}{8}(16) = 2 + 6 = 8$.

10. **Solution:** $P = A + \frac{1}{1+3}(B - A) = -12 + \frac{1}{4}(18) = -12 + 4.5 = -7.5$.

11. **Solution:** Given $AP : PB = 1 : 3$, $P = A + \frac{1}{4}(B - A)$. So $10 = 4 + \frac{B-4}{4} \Rightarrow 6 = \frac{B-4}{4} \Rightarrow B - 4 = 24 \Rightarrow \boxed{B = 28}$.

12. **Solution:** $AB : BC = 2 : 3 \Rightarrow B = A + \frac{2}{5}(C - A) = -2 + \frac{2}{5}(13) = -2 + \frac{26}{5} = \frac{16}{5} = 3.2$. Check: $AB = 3.2 - (-2) = 5.2$, $BC = 11 - 3.2 = 7.8$, and $5.2 + 7.8 = 13 = AC$.

13. **Solution:** $AC = |7 - (-8)| = 15$. $AP = 0.70 \cdot 15 = 10.5$. So $P = A + AP = -8 + 10.5 = 2.5$.

14. **Solution:** $P = A + \dfrac{5}{5+2}(B - A) = 1 + \dfrac{5}{7}(14) = 1 + 10 = \boxed{11}$.