Solutions for Rumack's Preparation Workbook: 2.1

1. To make a conclusion about the angles, observe if each is smaller than, equal to, or larger than 90°. All angles are less than 90°. The answer is (C).

2. To find the size of the angle, set up an equation using the fact that any straight line split into angles will have a total of 180°. $150° + b = 180°$, $b = 180° - 150°$, $b = 30°$. The answer is (B).

3. To find the value of angle *d*, set up an equation using the fact that any right angle split into angles will have a total of 90°. $d + 18° = 90°$, $d = 90° - 18° = 72°$. The answer is (E).

4. To find out what type of angle it is, set up an equation or try an example. $Angle = sum\ of\ two\ obtuse\ angles = (angle > 90°) + (angle > 90°) = angle > 180° = reflex\ angle$. The answer is (D).

5. To find the value of angle *c*, set up an equation using the fact that any straight line split into angles will have a total of 180°. $50° + 84° + c = 180°$, $134° + c = 180°$, $c = 180° - 134° = 46°$. The answer is (C).

6. To find the perimeter, add up all the side lengths. $7.5\ mm + 7.5\ mm + 7.5\ mm = 22.5\ mm$. The answer is (E).

7. To find the length of side *x*, setup an equation and solve. $Perimeter = sum\ of\ side\ lengths$, $161 = x + 52 + 87$, $161 = x + 139$, $161 - 139 = x$, $22 = x$. The answer is (D).

8. To find out which answer choice describes angle f, set up an equation using the fact that any straight line split into angles will have a total of 180°. $32° + f + 36° = 180°$, $f + 68° = 180°$, $f = 180° - 68° = 112°$. The answer is (B).

9. To find angle *p*, set up an equation using the fact that the sum of angles around a point is always 360°. $p + 62° = 360°$, $p = 360° - 62° = 298°$. The answer is (A).

10. To find the value of *x*, set up an equation using the fact that the sum of angles in any triangle is 180°. $44° + x + x = 180°$, $x + x = 180° - 44°$, $2x = 136°$, $2x \div 2 = 136° \div 2$, $x = 68°$. The answer is (B).

11. To find the size of angle *x*, set up an equation using the fact that any right angle split into angles will have a total of 90°. $x + y = 90°$, but $x = y$, so $x + x = 90°$, $2x = 90°$, $x = 90° \div 2 = 45°$. The answer is (C).

12. To find angle y, set up an equation using the fact that the sum of angles in a right angle is 90°. $y + 19.9° = 90°$, $y = 90° - 19.9° = 70.1°$.

13. To find the value of x, set up an equation using the fact that the sum of angles in a right angle is 90°. To identify the type of angle, classify it after finding it. $60.8 + x = 90°$, $x = 90° - 60.8° = 29.2°$. It is an acute angle since it is less than 90°. The answer is (A).

14. To find the size of angle x, set up an equation using the fact that any straight line split into angles will have a total of 180°. $123° + x = 180°$, $x = 180° - 123° = 57°$. The answer is (D).

15. To find the value of y, set up an equation using the fact that any straight line split into angles will have a total of 180°. $y + x = 180°$, but $y = x$, so $y + y = 180°$, $2y = 180°$, $y = 180° \div 2 = 90°$. The answer is (D).

16. To find the size of angle *x*, set up an equation using the fact that any straight line split into angles will have a total of 180°. To identify the type of angle, classify it after finding it. $107.5° + x = 180°$. $x = 180° - 107.5° = 72.5°$. Since $72.5°$ is less than $90°$, it is an acute angle. The answer is (C).

17. To find the size of angle y, set up an equation using the fact that any straight line split into angles will have a total of $180°$. To identify the type of angle, classify it after finding it. $y + 45° = 180°$, $y = 180° - 45° = 135°$. It is an obtuse angle, since it is greater than 90° and less than 180°. The answer is (B).

18. To find the measure of angle x, set up an equation using the fact that any straight line split into angles will have a total of 180°. To identify the type of angle, classify it after finding it. $83.7° + x = 180°$, $x = 180° - 83.7° = 96.3°$. Since it is between $90°$ and $180°$, it is an obtuse angle. The answer is (B).

19. To find the measure of y doubled, find y first. Set up an equation using the fact that any straight line split into angles will have a total of $180°$. Next, multiply the value of y by 2. Finally, classify this doubled angle. $y + 124.8° = 180°$, $y = 180° - 124.8° = 55.2°$, $y\ doubled = 110.4°$. It is an obtuse angle since it is between $90°$ and $180°$.

20. To find the size of angle z, set up an equation using the fact that any straight line split into angles will have a total of 180°. $z + 30° + x = 180°$. We are told that z is twice as big as x, so that means that z is half as big as $2x$. $2x + 30° + x = 180°$, $3x = 180° - 30°$, $3x = 150°$, $3x \div 3 = 150° \div 3$, $x = 50°$ Since $z = 2x$, $z = 50 \times 2 = 100°$. The answer is (B).

21. To find the length of HI, set up an equation for the perimeter of a pentagon. $Perimeter = sum\ of\ all\ side\ lengths$. $13.8 = 3.0 + 1.5 + 2.4 + 2.4 + HI$, $13.8 = 9.3 + HI$, $13.8 - 9.3 = HI$, $4.5 = HI$. The answer is (D).

22. To find the perimeter, add up all the side lengths. $Perimeter = 4.4 + 4.4 + 3.1 + 6.1 = 18.0$. The answer is (B).

23. To find the length of GH, set up an equation for the perimeter of the quadrilateral. $Perimeter = sum\ of\ all\ side\ lengths$, $17.2 = 4.6 + 5.9 + 3.2 + GH$, $17.2 = 13.7 + GH$, $17.2 - 13.7 = GH$, $3.5 = GH$. The answer is (B).

24. To find c, set up an equation, put in the known values, and solve for c. $Perimeter = a + b + c$, $12.9 = 5.3 + 4.6 + c$, $12.9 = 5.3 + 4.6 + c$, $12.9 = 9.9 + c$, $12.9 - 9.9 = c$, $c = 3$. The answer is (C).

25. To find the perimeter, add up all the side lengths. $Perimeter = 4.6 + 9.0 + 6.0 = 19.6$. The answer is (C).