NAME _____ DATE _____

Module Test B

Module 18

Solve.

1. $-\sqrt{r} = 6$ **no solution**
2. $\sqrt{w} = 9$ **$w = 81$**
3. $-\sqrt{g} = -11$ **$g = 121$**
4. $\sqrt{c} = \frac{1}{5}$ **$c = \frac{1}{25}$**
5. $\sqrt[3]{x} = 2$ **$x = 8$**
6. $\sqrt[3]{x} = -3$ **$x = -27$**
7. $\sqrt[3]{q} = \frac{3}{4}$ **$q = \frac{27}{64}$**
8. $\sqrt[4]{z} = -4$ **no solution**
9. $2\sqrt{w} = 16$ **$w = 64$**
10. $\frac{2}{3}\sqrt{y} = 6$ **$y = 81$**
11. $\sqrt{n} + 2 = 1$ **no solution**
12. $\sqrt{5b} = 15$ **$b = 45$**
13. $\sqrt{h + 7} = 5$ **$h = 18$**
14. $\sqrt{2x} + 3 = 1$ **no solution**
15. $\sqrt[3]{n + 4} = -3$ **$n = -31$**
16. $\frac{\sqrt{2w}}{3} = 2$ **$w = 18$**

Choose the letter of the correct answer.

17. A scientist found that the speed of sound, under certain laboratory conditions, was 370 meters per second. What is the temperature in the laboratory? (Use the formula $v = 20\sqrt{t + 273}$, where v is the speed of sound in meters per second, and t is the temperature in °C.)

    a. –254.5°C
    b. 69.25°C
    c. 197°C
    d. 507°C

18. A 41-foot wire is attached to the top of a 40-foot telephone pole and is anchored to the ground. How far from the base of the pole is the wire anchored? (Use the formula $c = \sqrt{a^2 + b^2}$, where c is the length of the hypotenuse of a right triangle, and a and b are the lengths of its legs.)

    a. 3 feet
    b. 9 feet
    c. 57 feet
    d. 81 feet

Complete each of the following statements.

19. The midpoint of the segment with endpoints at (a, b) and (c, d) can be found using the formula $M =$ $\left(\frac{a+c}{2}, \frac{b+d}{2}\right)$.

20. The distance between the points (h, i) and (j, k) can be found using the formula $d =$ $\sqrt{(j-h)^2 + (k-i)^2}$.

21. Raising an expression to the 2nd power and taking the square root of that expression are **inverse operations**.

Solve each problem.

22. A new skateboarding park is opening five miles west and two miles north of Sam's house. Currently, there is another skateboarding park located two miles west and six miles south of Sam's house. How far apart will the two parks be?

The two parks will be $\sqrt{73}$ or approximately 8.5 miles apart.

23. A police officer is stationed at a point halfway between two patrol cars. One car is located two blocks east and one block north of a traffic accident, and another is located four blocks west and one block south of the same accident. Relative to the location of the traffic accident, where is the officer stationed?

The officer is stationed one block west of the traffic accident.

24. Triangle ABC has vertices at $A(-2, 6)$, $B(4, 0)$, and $C(0, 2)$. What is the length of the segment connecting the midpoints of sides $\overline{AB}$ and $\overline{AC}$?

a. Explain the steps needed to solve the problem.

First, find the midpoints of sides $\overline{AB}$ and $\overline{AC}$ using the midpoint formula.

Then, use the distance formula to find the distance between the mid-

b. Solve the problem.

Midpoint of $\overline{AB}$ is at $\left(\frac{-2+4}{2}, \frac{6+0}{2}\right)$ or (1, 3).

Midpoint of $\overline{AC}$ is at $\left(\frac{-2+0}{2}, \frac{6+2}{2}\right)$ or (–1, 4).

The distance from (1, 3) to (–1, 4) is $d = \sqrt{(-1-1)^2 + (4-3)^2} = \sqrt{4+1} = \sqrt{5}$.

25. Give an example of points A and B so that the midpoint of $\overline{AB}$ is at (0, 0).

Possible answer: $A(-2, 0)$ and $B(2, 0)$