

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Module Test **A**

## Module 17

### Fill in the blanks.

- The radical expression  $\sqrt{x^2}$  can be simplified as  $|x|$ .
- The radical expression  $\sqrt[3]{x^3}$  can be simplified as  $x$ .
- The conjugate of  $5 + \sqrt{2}$  is  $5 - \sqrt{2}$ .
- The conjugate of  $\sqrt{7} - \sqrt{3}$  is  $\sqrt{7} + \sqrt{3}$ .

### Determine whether each statement is true or false.

- |   |   |
|---|---|
| 5. The radical expression $\sqrt{-25}$ is not a real number.<br><b>True</b>       | 6. The radical expression $-\sqrt{16}$ is not a real number.<br><b>False</b>            |
| 7. The radical expression $\sqrt{(-8)^2}$ equals $-8$ .<br><b>False</b>           | 8. The radical expression $\sqrt{5^2}$ equals $-5$ .<br><b>False</b>                    |
| 9. The radical expression $\sqrt[3]{2^3}$ equals $-2$ .<br><b>False</b>           | 10. The product $\sqrt{x} \cdot \sqrt{x}$ is $x$ , for $x > 0$ .<br><b>True</b>         |
| 11. The fraction $\frac{\sqrt{15}}{5}$ simplifies to $\sqrt{3}$ .<br><b>False</b> | 12. The fraction $\frac{\sqrt{10}}{\sqrt{2}}$ simplifies to $\sqrt{5}$ .<br><b>True</b> |

### Choose the simplest form of the given value.

- $\sqrt[3]{8}$   

a. 2	b. $\sqrt[3]{2}$	c. $2\sqrt{2}$	d. $2\sqrt[3]{2}$
------	------------------	----------------	-------------------
- $\sqrt{-25}$   

a. 5	b. $-5$	c. not a real number	d. $5\sqrt{-1}$
------	---------	----------------------	-----------------
- $\sqrt{72}$   

a. $3\sqrt{8}$	b. $6\sqrt{2}$	c. $2\sqrt{18}$	d. 36
----------------	----------------	-----------------	-------

16.  $\sqrt[3]{250}$

- a.  $5\sqrt[3]{2}$       b.  $5\sqrt[3]{10}$       c.  $2\sqrt[3]{5}$       d.  $5\sqrt{2}$

17.  $\sqrt{\frac{2}{3}}$

- a.  $\frac{\sqrt{2}}{\sqrt{3}}$       b.  $\sqrt{2}$       c.  $\frac{2}{\sqrt{6}}$       d.  $\frac{\sqrt{6}}{3}$

Simplify the following expressions.

18.  $3\sqrt{11} + 5\sqrt{11}$

$8\sqrt{11}$

19.  $8\sqrt[3]{2} - \sqrt[3]{2}$

$7\sqrt[3]{2}$

20.  $\sqrt{9x} - \sqrt{81x}$

$-6\sqrt{x}$

21.  $\sqrt{50} + \sqrt{18}$

$8\sqrt{2}$

22.  $2\sqrt{7} - 3\sqrt{5} + \sqrt{5} + 6\sqrt{7}$

$8\sqrt{7} - 2\sqrt{5}$

23.  $\sqrt{2}(\sqrt{3} + \sqrt{6})$

$\sqrt{6} + 2\sqrt{3}$

24.  $\frac{\sqrt{3}}{\sqrt{6}}$

$\frac{\sqrt{2}}{2}$

25.  $\sqrt{\frac{16}{5}}$

$\frac{4\sqrt{5}}{5}$

26.  $\frac{1}{\sqrt{8}}$

$\frac{\sqrt{2}}{4}$

Answer the following questions.

27. When is it necessary to rationalize a denominator, and what does the term rationalize mean?

**If the radicand in the denominator is not a perfect square, the denominator must be converted to a rational number without changing the value of the entire expression; the radical in the denominator must be eliminated. This is rationalizing the denominator.**

28. Explain what it means for a radical expression to be in simplest form.

**A radical expression is in simplest form if there are no perfect square factors other than the number one under the radical sign; there are no fractions under the radical sign; and there are no radicals in the denominator.**