CHAPTER 8

Name _____ Date _____

# Standardized Test

*For use after Chapter 8*

## Multiple Choice

**1.** Which expression is equivalent to $(-2)^8$?

Ⓐ $(-2)^2(-2)^4$ Ⓑ $(-2)(-2)^7$

Ⓒ $[(-2)^4]^4$ Ⓓ $[(-2)^5]^3$

**2.** Which expression is equivalent to $16x^{15}$?

Ⓐ $(4x^6)^2 \cdot x^3$ Ⓑ $2x^5 \cdot 8x^3$

Ⓒ $2x^5 \cdot (2x)^3$ Ⓓ $(2x^3)^5$

**3.** Which expression is equivalent to $(-2a)(-4a^2b^3c)^2(-5a^4b^3c^6)^2$?

Ⓐ $-40a^{13}b^{12}c^{14}$ Ⓑ $800a^{11}b^{10}c^{11}$

Ⓒ $400a^{11}b^{10}c^{10}$ Ⓓ $-800a^{13}b^{12}c^{14}$

**4.** Which expression is equivalent to $14^6$?

Ⓐ $\frac{14^4}{14^2}$ Ⓑ $\frac{(14^5)^3}{14^9}$

Ⓒ $\frac{14^{12}}{14^2}$ Ⓓ $\left(\frac{14^{11}}{14^5}\right)^3$

**5.** Which expression is equivalent to $\left(\frac{4x^4}{2x^3}\right)^3$?

Ⓐ $2x$ Ⓑ $8x$

Ⓒ $8x^3$ Ⓓ $16x^{21}$

**6.** Which value of $x$ makes the equation $\frac{ax \cdot a^8}{a^3} = a^6$ true?

Ⓐ $x = 0$ Ⓑ $x = 1$

Ⓒ $x = 2$ Ⓓ $x = 3$

**7.** Which expression simplifies to $3x^5$?

Ⓐ $\frac{3}{x^{-5}}$ Ⓑ $3x^{-5}$

Ⓒ $\frac{1}{3x^{-5}}$ Ⓓ $\left(\frac{1}{3x}\right)^{-5}$

**8.** Which expression is equivalent to $(-5 \cdot 2^2 \cdot 2^0)^{-2}$?

Ⓐ $-80$ Ⓑ $-40$

Ⓒ $-\frac{1}{40}$ Ⓓ $-\frac{1}{400}$

**9.** Which expression is equivalent to $\sqrt{72}$?

Ⓐ $\sqrt{70} + \sqrt{2}$ Ⓑ $6\sqrt{2}$

Ⓒ $12$ Ⓓ $36$

**10.** Which expression is equivalent to $\sqrt{24} \cdot \sqrt{2}$ in its simplest form?

Ⓐ $4\sqrt{3}$ Ⓑ $16\sqrt{3}$

Ⓒ $2\sqrt{12}$ Ⓓ $12\sqrt{2}$

**11.** Which expression is equivalent to $\sqrt{\frac{16x}{49}}$?

Ⓐ $\frac{4x}{7}$ Ⓑ $\frac{4\sqrt{x}}{49}$

Ⓒ $\frac{4\sqrt{x}}{7}$ Ⓓ $\frac{\sqrt{4x}}{7}$

**12.** Which expression is equivalent to $\sqrt{\frac{9}{32}}$ in its simplest form?

Ⓐ $\frac{3}{\sqrt{32}}$ Ⓑ $\frac{3}{4\sqrt{2}}$

Ⓒ $\frac{3\sqrt{2}}{4}$ Ⓓ $\frac{3\sqrt{2}}{8}$

**13.** Which expression is equivalent to $\sqrt{\frac{5x^2}{6}}$ in its simplest form?

Ⓐ $\frac{x\sqrt{5}}{\sqrt{6}}$ Ⓑ $\frac{30\sqrt{x}}{6}$

Ⓒ $\frac{x\sqrt{5}}{6}$ Ⓓ $\frac{x\sqrt{30}}{6}$

**14.** Which expression is equivalent to $\sqrt{24} + 5\sqrt{6} - \sqrt{54}$?

Ⓐ $10\sqrt{2}$ Ⓑ $4\sqrt{6}$

Ⓒ $5 - \sqrt{24}$ Ⓓ $10\sqrt{6}$

CHAPTER 8 Continued

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# Standardized Test

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**15.** Which expression is *not* equivalent to $2^{\frac{2}{3}}$ ?

Ⓐ $3\sqrt{2^2}$ Ⓑ $(2^2)^{\frac{1}{3}}$

Ⓒ $\sqrt{2^3}$ Ⓓ $(2^{\frac{1}{3}})^2$

**16.** Which shows $32^{\frac{2}{5}} + 16^{\frac{1}{4}}$ written in simplest form?

Ⓐ $48^{\frac{1}{10}}$ Ⓑ 4

Ⓒ 6 Ⓓ 8

**17.** Given a right triangle with side lengths 7 and 24, what is the length of the hypotenuse?

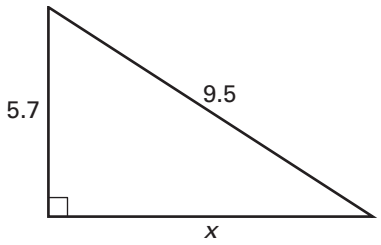
Ⓐ 25 Ⓑ 31 Ⓒ 62 Ⓓ 625

**18.** Which of the triangles with the given side lengths is *not* a right triangle?

Ⓐ 3, 4, 5 Ⓑ 11, 60, 61

Ⓒ 15, 20, 25 Ⓓ 9, 39, 41

**19.** Find the missing side length.




Ⓐ 7.6 Ⓑ 15.2

Ⓒ 54.15 Ⓓ 55

### Short Response

**20.** Some scientists estimate that there may be as many as $10^{11}$ stars in the Milky Way galaxy. Suppose all these stars are spread out evenly in the galaxy, which is estimated to have a length of about $10^{12}$ light-years. What would be the average distance in light-years between each star in the galaxy? *Explain.*

### Extended Response

**21.** The top of a ladder rests at the base of a window that is 13 feet above the ground. The foot of the ladder is $x$ feet from the building.

**a.** Write an expression to show the height of the ladder.

**b.** If the foot of the ladder is 5 feet away from the building, what is the length of the ladder?

**c.** If the ladder is exactly 15 feet long, about how far away from the building is the foot of the ladder to the nearest tenth of a foot?