

LHF STUDY GUIDE PASS THE HiSET® MATH TEST!

ALGEBRA

Test Lessons 1-6 Answers – p. 4

- Which of the following has the same value as 8^3 ?
A. 24 B. 512 C. 64 D. 4,096 E. 11
- What is the value of $\left(\frac{3}{4}\right)^3$?
A. $\frac{9}{12}$ B. $\frac{9}{4}$ C. $\frac{6}{7}$ D. $\frac{27}{64}$ E. $\frac{9}{16}$
- Calculate the value of $\sqrt{144 + 256}$.
A. 20 B. 28 C. 400 D. 160,000 E. 40
- The square root of 92 lies between which pair of integers?
A. 12 and 13 B. 11 and 12 C. 10 and 11 D. 9 and 10 E. 8 and 9
- What is the value of $-42 + 12$?
A. 54 B. 30 C. -54 D. -30 E. -32
- Find the value of $15 - (-3)$.
A. 18 B. 12 C. -18 D. -12 E. -2
- Which of the following has the same value as $5 + 7 \times 3^2$?
A. 108 B. 47 C. 68 D. 72 E. 21
- Find the value of $9\left(\frac{1}{2} + \frac{5}{6}\right) - 4\frac{7}{8}$.
A. $2\frac{1}{8}$ B. $16\frac{7}{8}$ C. $18\frac{5}{8}$ D. $7\frac{1}{8}$ E. $7\frac{7}{8}$
- Which of the following is equivalent to $5x^2 - 7x + 4x + 2 + 2x^2$?
A. $7x^2 + 3x + 2$ B. $7x^2 - 11x + 2$ C. $7x^2 - 3x + 2$
D. $3x^2 + 11x + 2$ E. $4x^2 + 2$

10. Which of the following is the product of $(x + 8)$ and $(x - 5)$?
 A. $2x + 3$ B. $2x - 3$ C. $x^2 - 13x + 40$
 D. $x^2 + 3x + 40$ E. $x^2 + 3x - 40$
11. Which expression has the same value as $3(x + 4) + 6x$?
 A. $9x + 4$ B. $9x + 12$ C. $10x$ D. $18x^2 + 4$ E. $21x$
12. Which polynomial is the sum of $6x^2$, $4y^2$, 13 , $-2x^2$, and $9y^2$?
 A. $8x^2 + 13y^2 + 13$ B. $10x^2 + 7y^2 + 13$ C. $-4x^2 + 13y^2 + 13$
 D. $4x^2 + 4y^2 + 13$ E. $4x^2 + 13y^2 + 13$
13. What is the product of $4x^5$ and $-6x^2$?
 A. $-24x^7$ B. $-24x^{10}$ C. $-2x^3$ D. $20x^7$ E. $-20x^7$
14. Which expression below is equivalent to $(5x + 4)(2x^2 + 6x)$?
 A. $2x^2 + 11x + 4$ B. $10x^3 + 30x^2 + 24x$ C. $10x^3 + 38x^2 + 24x$
 D. $48x^2 + 24x$ E. $10x^3 + 24x$
15. What is the sum of these two polynomials?

$$\begin{array}{r} 9x^2 + 4x + 8 \\ + 2x^2 - 9x + 7 \\ \hline \end{array}$$

 A. $11x^2 + 5x + 15$ B. $11x^2 - 5x + 15$ C. $11x^2 - 13x + 15$
 D. $11x^2 + 13x + 15$ E. $11x^4 - 5x^2 + 15$
16. Evaluate the expression $3x^2 + 2x - 6$ when $x = 5$.
 A. 34 B. 19 C. 89 D. 36 E. 79
17. Calculate the value of $3x^2 - 2y^2 + 2$ when $x = 4$ and $y = 6$.
 A. 2 B. -24 C. 122 D. -22 E. 22
18. What is the value of $\sqrt{17x - 3y}$ when $x = 3$ and $y = 5$?
 A. 36 B. 6 C. 66 D. 8.1 E. 51

19. What is the solution to $5x - 14 = 1$?
A. $x = 1$ B. $x = 2$ C. $x = 3$ D. $x = 4$ E. $x = 5$
20. What is the value of x in the equation $x^2 + y^2 - 3x = 43$ when $y = 5$?
A. $x = 6$ B. $x = 7$ C. $x = 8$ D. $x = 9$ E. $x = 10$
21. If $2x^2 - 12 = x + 3$, then $x =$?
A. $x = 10$ B. $x = 2$ C. $x = 8$ D. $x = 3$ E. $x = 1$
22. Find the value of x when $\frac{1}{3}x - 4 = 8$.
A. $x = 21$ B. $x = 36$ C. $x = 30$ D. $x = 33$ E. $x = 18$
23. If $\frac{x}{20} = \frac{1}{10}$, what is the value of x ?
A. $x = 10$ B. $x = 5$ C. $x = 4$ D. $x = 8$ E. $x = 2$
24. Solve the equation $\sqrt{9x + 18} = 9$.
A. $x = 7$ B. $x = 81$ C. $x = 9$ D. $x = 21$ E. $x = 3$
25. What is the value of x if the average of x and 22 is 16 ?
A. $x = 19$ B. $x = 6$ C. $x = 10$ D. $x = -6$ E. $x = 32$

ANSWER KEY Algebra Test Lessons 1-6

1. Which of the following has the same value as 8^3 ? **Answer: B. 512**
 $8^3 = 8 \times 8 \times 8 = 512$ (Lesson One, p. 1)

2. What is the value of $\left(\frac{3}{4}\right)^3$? **Answer: D. $\frac{27}{64}$** (Lesson One, p. 2)

$$\left(\frac{3}{4}\right)^3 = \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} = \frac{27}{64}$$

OR

$$\left(\frac{3}{4}\right)^3 = \frac{3^3}{4^3} = \frac{27}{64} \quad \begin{array}{l} \text{Press } 3 \times 3 \times 3 = \text{ OR } 3 \times 3 \times 3 \text{ to get 27 for the top of the fraction.} \\ \text{Press } 4 \times 4 \times 4 = \text{ OR } 4 \times 4 \times 4 \text{ to get 64 for the bottom of the fraction.} \end{array}$$

3. Calculate the value of $\sqrt{144 + 256}$. **Answer: A. 20** (Lesson One, p. 4)

$$\sqrt{144 + 256} = \sqrt{400} = 20$$

4. The square root of 92 lies between which pair of integers? **Answer: D. 9 and 10**
 $\sqrt{92} = 9.59$ which is between **9 and 10**. (Lesson One, p. 5)

5. What is the value of $-42 + 12$? **Answer: D. -30** (Lesson Two)

6. Find the value of $15 - (-3)$. **Answer: A. 18** (Lesson Two)

7. Which of the following has the same value as $5 + 7 \times 3^2$? **Answer: C. 68**
 $5 + 7 \times 3^2$ (Lesson Three)

$$5 + 7 \times 9$$

$$5 + 63$$

68

8. Find the value of $9\left(\frac{1}{2} + \frac{5}{6}\right) - 4\frac{7}{8}$. **Answer: D. $7\frac{1}{8}$**

$$9\left(\frac{1}{2} + \frac{5}{6}\right) - 4\frac{7}{8} \quad \text{(Lesson Three)}$$

$$9 \times 1\frac{1}{3} - 4\frac{7}{8}$$

$$12 - 4\frac{7}{8}$$

$$7\frac{1}{8}$$

9. Which of the following is equivalent to $5x^2 - 7x + 4x + 2 + 2x^2$?

Answer: C. $7x^2 - 3x + 2$ (Lesson Four, p. 2-3)

10. Which of the following is the product of $(x + 8)$ and $(x - 5)$? **Answer:**

$$\begin{aligned}(x + 8)(x - 5) &= (x)(x) + (x)(-5) + (8)(x) + (8)(-5) \\ &= x^2 + (-5x) + 8x + (-40) \\ &= x^2 + 3x - 40\end{aligned}$$

E. $x^2 + 3x - 40$
(Lesson Four, p. 8-9)

11. Which expression has the same value as $3(x + 4) + 6x$?

$$\begin{aligned}3(x + 4) + 6x &= 3(x) + 3(4) + 6x \\ &= 3x + 12 + 6x \\ &= 9x + 12\end{aligned}$$

Answer: B. $9x + 12$
(Lesson Four, p. 6)

12. Which polynomial is the sum of $6x^2$, $4y^2$, 13 , $-2x^2$, and $9y^2$?

$$\begin{aligned}6x^2 + 4y^2 + 13 + (-2x^2) + 9y^2 \\ \text{Combine like terms to get } 4x^2 + 13y^2 + 13.\end{aligned}$$

Answer: E. $4x^2 + 13y^2 + 13$
(Lesson Four, p. 5)

13. What is the product of $4x^5$ and $-6x^2$? **Answer: A. $-24x^7$** (Lesson Four, p. 14)

$$(4x^5)(-6x^2) = (4)(-6)(x^{5+2}) = -24x^7$$

14. Which expression below is equivalent to $(5x + 4)(2x^2 + 6x)$?

Answer: C. $10x^3 + 38x^2 + 24x$ (Lesson Four, p. 14-15)

$$\begin{aligned}(5x + 4)(2x^2 + 6x) &= (5x)(2x^2) + (5x)(6x) + (4)(2x^2) + (4)(6x) \\ &= 10x^3 + 30x^2 + 8x^2 + 24x \\ &= 10x^3 + 38x^2 + 24x\end{aligned}$$

15. What is the sum of these two polynomials? **Answer: B. $11x^2 - 5x + 15$**

$$\begin{array}{r}9x^2 + 4x + 8 \\ + \quad 2x^2 - 9x + 7 \\ \hline\end{array}$$

(Lesson Four, p. 3 - 4)

16. Evaluate the expression $3x^2 + 2x - 6$ when $x = 5$. **Answer: E. 79**

$$\begin{aligned}3x^2 + 2x - 6 \\ 3(5^2) + 2(5) - 6 \\ 3(25) + 2(5) - 6 \\ 75 + 10 - 6 \\ \mathbf{79}\end{aligned}$$

(Lesson Five, p. 1)

17. Calculate the value of $3x^2 - 2y^2 + 2$ when $x = 4$ and $y = 6$. **Answer: D. -22**
(Lesson Five, p. 2)
- $$3x^2 - 2y^2 + 2$$
- $$3(4^2) - 2(6^2) + 2$$
- $$3(16) - 2(36) + 2$$
- $$48 - 72 + 2$$
- $$-24 + 2$$
- $$-22$$

18. What is the value of $\sqrt{17x - 3y}$ when $x = 3$ and $y = 5$? **Answer: B. 6**
(Lesson Five p. 4)
- $$\sqrt{17x - 3y}$$
- $$\sqrt{(17)(3) - (3)(5)}$$
- $$\sqrt{51 - 15}$$
- $$\sqrt{36}$$
- $$6$$

19. What is the solution to $5x - 14 = 1$? **Answer: C. $x = 3$** *(Lesson Six p. 2)*
- $$5x - 14 = 1$$
- $$(5)(3) - 14 = 1$$
- $$15 - 14 = 1$$
- $$1 = 1$$

20. What is the value of x in the equation $x^2 + y^2 - 3x = 43$ when $y = 5$? **Answer: A. $x = 6$**
(Lesson Six p. 3)
- $$x^2 + y^2 - 3x = 43$$
- $$x^2 + 5^2 - 3x = 43$$
- $$6^2 + 5^2 - 3(6) = 43$$
- $$36 + 25 - 3(6) = 43$$
- $$36 + 25 - 18 = 43$$
- $$61 - 18 = 43$$
- $$43 = 43$$

21. If $2x^2 - 12 = x + 3$, then $x = ?$ **Answer: D. $x = 3$** *(Lesson Six p. 6)*
- $$2x^2 - 12 = x + 3$$
- $$(2)(3^2) - 12 = 3 + 3$$
- $$(2)(9) - 12 = 6$$
- $$18 - 12 = 6$$
- $$6 = 6$$

22. Find the value of x when $\frac{1}{3}x - 4 = 8$. **Answer: B. $x = 36$** (*Lesson Six p. 8*)

$$\begin{aligned}\frac{1}{3}x - 4 &= 8 \\ \frac{1}{3}(36) - 4 &= 8 \\ 12 - 4 &= 8 \\ 8 &= 8\end{aligned}$$

23. If $\frac{x}{20} = \frac{1}{10}$, what is the value of x ? **Answer: E. $x = 2$** (*Lesson Six p. 9*)

$$\frac{x}{20} = \frac{1}{10}$$

$$\frac{2}{20} = \frac{1}{10} \quad \text{reduce}$$

$$\frac{1}{10} = \frac{1}{10}$$

OR solve proportion: $20 \times 1 \div 10 = 2$

24. Solve the equation $\sqrt{9x + 18} = 9$. **Answer: A. $x = 7$** (*Lesson Six p. 10*)

$$\begin{aligned}\sqrt{9x + 18} &= 9 \\ \sqrt{(9)(7) + 18} &= 9 \\ \sqrt{63 + 18} &= 9 \\ \sqrt{81} &= 9 \\ 9 &= 9\end{aligned}$$

25. What is the value of x if the average of x and 22 is 16? **Answer: C. $x = 10$** (*Lesson Six p. 13*)

$$\begin{aligned}(x + 22) \div 2 &= 16 \\ (10 + 22) \div 2 &= 16 \\ 32 \div 2 &= 16 \\ 16 &= 16\end{aligned}$$