

**SHMS 8th Numbers Ops (SHMS8NumbersOperations)**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

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1.

Adrian has a square bedroom. The area of the room is  $169 \text{ ft}^2$ . What is the length of one side of Adrian's bedroom?

- A.  $6 \frac{1}{2}$  ft
- B. 13 ft
- C.  $42 \frac{1}{4}$  ft
- D.  $84 \frac{1}{2}$  ft

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2. Which of the following is *not* a perfect square?

- A. 49
- B. 64
- C. 81
- D. 99

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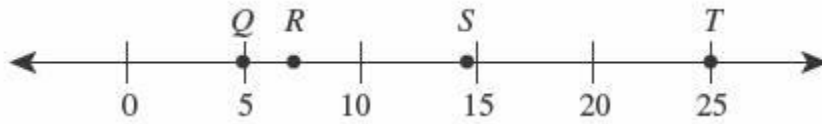
3. The area of a square is 49 square inches. What is the length of one side of the square?

- A. 49 inches
- B. 25 inches
- C. 12 inches
- D. 7 inches

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4. A part of the real number line is shown below.



Which letter best represents the location of  $\sqrt{50}$ ?

- A.  $Q$
- B.  $R$
- C.  $S$
- D.  $T$

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5. **Between what two consecutive whole numbers does  $\sqrt{61}$  lie?**

- A. 6 and 7
- B. 7 and 8
- C. 8 and 9
- D. 9 and 10

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6. Mr. Hardt bought a square piece of carpet with an area of 39 square yards. The length of each side of this carpet is between which of the following?

- A. 4 yards and 5 yards
- B. 5 yards and 6 yards
- C. 6 yards and 7 yards
- D. 7 yards and 8 yards
- E. 9 yards and 10 yards

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7. Which is closest to the value of

$$(2\sqrt{3})(6\sqrt{2})?$$

- A. 7.7
- B. 8.5
- C. 18.0
- D. 29.4

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8. Which of the following is **not** an irrational number?

A.  $\pi$

B.  $\sqrt{3}$

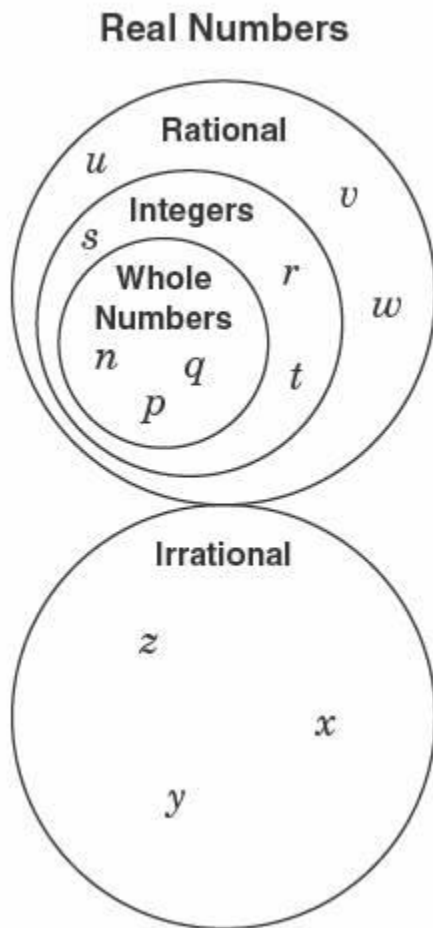
C.  $\sqrt{8}$

D.  $2\sqrt{4}$

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9. The diagram shows how some of the subsets of the set of real numbers are related. The letters represent members of the sets.



Terrie wants to replace the letters with actual numbers. Which letter could be replaced with  $-3$ ?

- A.  $n$
- B.  $r$
- C.  $u$
- D.  $x$

10. Which of the following real numbers is *not* a rational number?

A.  $\sqrt{21}$

B.  $3\frac{5}{8}$

C. 2.41414

D. -13

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11.  $3^3 + 4(8 - 5) \div 6 =$

A. 6.5

B. 11

C. 27.5

D. 29

E. 34.16

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12. For what value of  $x$  is  $8^{12} = 16^x$ ?

- A. 3
- B. 4
- C. 8
- D. 9
- E. 12

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13. When simplified,  $(2x^2y^3)^4$  equals —

- A.  $8x^6y^7$
- B.  $8x^8y^{12}$
- C.  $16x^6y^7$
- D.  $16x^8y^{12}$

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14. Based on the geometric pattern shown, what is the value of  $8^5$ ?

$$8^1 = 8$$

$$8^2 = 64$$

$$8^3 = 512$$

$$8^4 = 4,096$$

- A. 13.
- B. 40.
- C. 20,480.
- D. 32,768.

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15. Pittsfield and Provincetown are approximately 258,000 meters apart. Which of the following shows this number in scientific notation?

- A.  $258 \times 10^3$
- B.  $258 \times 10^{-3}$
- C.  $2.58 \times 10^5$
- D.  $2.58 \times 10^{-5}$

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16.

9.8413 02

The figure above represents a calculator display showing a number in scientific notation. That number is

- A. 0.098413
- B. 0.98413
- C. 19.6826
- D. 98.413
- E. 984.13

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17. The mean distance from Venus to the Sun is  $1.08 \times 10^8$  kilometers. Which of the following quantities is equal to this distance?

- A. 10,800,000 kilometers
- B. 108,000,000 kilometers
- C. 1,080,000,000 kilometers
- D. 10,800,000,000 kilometers
- E. 108,000,000,000 kilometers

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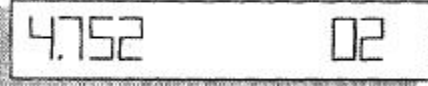
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18. The diameter of a red blood cell, in inches, is  $3 \times 10^{-4}$ . This expression is the same as which of the following numbers?

- A. 0.00003
- B. 0.0003
- C. 0.003
- D. 3,000
- E. 30,000

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19. 

The figure above shows the display on a scientific calculator. The value of the displayed number is between which of the following pairs of numbers?

- A. 0.04 and 0.05
- B. 0.4 and 0.5
- C. 4.0 and 5.0
- D. 40.0 and 50.0
- E. 400.0 and 500.0

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20. The number 514 in scientific notation is written as —

A.  $5.14 \times 10^1$

B.  $5.14 \times 10^3$

C.  $51.4 \times 10^1$

D.  $514 \times 10^3$

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