

# Powers and Roots (7NS 2.4 ):

Name \_\_\_\_\_

Class \_\_\_\_\_ Date \_\_\_\_\_

Score \_\_\_\_\_

Between which two integers is the value of  $\sqrt{37}$

- 1 Find the first integer with a perfect square *less than 37*:

$$\begin{aligned} 4^2 &= 16 \\ 6^2 &= 36 \end{aligned}$$

$$\begin{aligned} 5^2 &= 25 \\ 7^2 &= 49 \end{aligned}$$

- 2 Find the first integer with a perfect square *greater than 37*:

$$\begin{aligned} 4^2 &= 16 \\ 6^2 &= 36 \end{aligned}$$

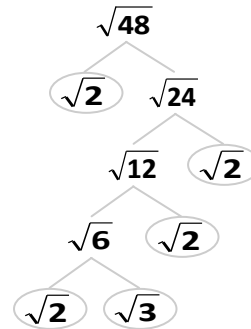
$$\begin{aligned} 5^2 &= 25 \\ 7^2 &= 49 \end{aligned}$$

- 3 Step 1 gives you the *beginning* of the range, and step 2 gives you the *end* of the range:

$$\sqrt{37} = \text{Between the integers of } 6 \text{ and } 7$$

$\sqrt{48} =$

- 1 Factor  $\sqrt{48}$



- 2 Group factors under a radical:

$$\sqrt{48} = \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3}$$

- 3 "Pull out" factor pairs to the outside of the radical

$$2 \cdot 2 \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3}$$

- 4 Regroup and simplify.

$$2 \cdot 2 \sqrt{3} \Rightarrow 4\sqrt{3}$$

## 1) Factor $\sqrt{20}$

- A.  $2\sqrt{5}$   
 B.  $2\sqrt{10}$   
 C.  $4\sqrt{5}$   
 D.  $5\sqrt{5}$

## 2) Factor $\sqrt{90}$

- A.  $10\sqrt{3}$   
 B.  $9\sqrt{10}$   
 C.  $3\sqrt{10}$   
 D.  $6\sqrt{15}$

## 3) Factor $\sqrt{45}$

- A.  $9\sqrt{5}$   
 B.  $5\sqrt{9}$   
 C.  $5\sqrt{3}$   
 D.  $3\sqrt{5}$

## 4) Factor $\sqrt{44}$

- A.  $4\sqrt{11}$   
 B.  $2\sqrt{11}$   
 C.  $2\sqrt{22}$   
 D.  $2\sqrt{12}$

## 5) Factor $\sqrt{320}$

- A.  $8\sqrt{5}$   
 B.  $40\sqrt{8}$   
 C.  $32\sqrt{10}$   
 D.  $64\sqrt{5}$

## 6) The square root of 125 is between

- A. 10 and 11  
 B. 11 and 12  
 C. 12 and 13  
 D. 13 and 14

## ***Powers and Roots (7NS 2.4 ):***

**7) The square root of 300 is between**

- A. 17 and 18
- B. 18 and 19
- C. 19 and 20
- D. 20 and 21

**8) The square root of 430 is between**

- A. 18 and 19
- B. 19 and 20
- C. 20 and 21
- D. 21 and 22

**9) The square root of 8200 is between**

- A. 80 and 85
- B. 85 and 90
- C. 90 and 95
- D. 95 and 100

**10) The square root of 100,000 is between**

- A. 200 and 300
- B. 300 and 400
- C. 400 and 500
- D. 500 and 600

**11) The square of a *whole* number is between 100 and 200. The number must be between**

- A. 5 and 10
- B. 10 and 15
- C. 15 and 20
- D. 20 and 25

**12) The square of a whole number is between 7,800 and 8,000. The number must be between**

- A. 82 and 84
- B. 84 and 86
- C. 86 and 88
- D. 88 and 90

**13) The square root of a positive integer  $r$  is between 33 and 34.**

**Which of the following is a possible value for  $r$ ?**

- A. 900
- B. 1000
- C. 1100
- D. 1200

**14) The number  $x$  is a positive integer, such that  $2000 < x^2 < 2500$ .**

**Which of the following must be true?**

- A.  $20 < x < 30$
- B.  $30 < x < 40$
- C.  $40 < x < 50$
- D.  $50 < x < 60$

**15) The square root of a positive integer  $r$  is between 150 and 155.**

**Which of the following is a possible value for  $r$ ?**

- A. 20,000
- B. 24,000
- C. 28,000
- D. 32,000

**16) The number  $z$  is a positive integer, such that  $800 < z^2 < 900$ .**

**Which of the following must be true?**

- A.  $20 < z < 25$
- B.  $25 < z < 30$
- C.  $30 < z < 35$
- D.  $35 < z < 40$