

## Grade 8 Math Sample Worksheet

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Student Name \_\_\_\_\_

Date \_\_\_\_\_

### Notes

#### Finding the approximate square root

Example

$$\sqrt{30}$$

If we are looking for the square root of 30, we first need to find two perfect squares near 30. One should be less than 30 and other should be more than 30.

$$5 \times 5 = 25$$

$$6 \times 6 = 36$$

25 is the perfect square less than 30.

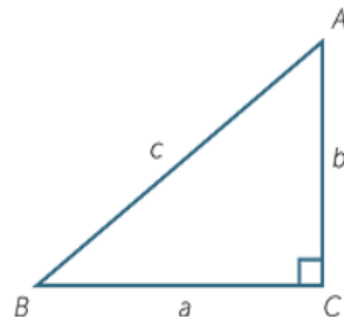
36 is the perfect square greater than 30.

**Because 30 is between 25 and 36, we can say that the approximate square root of 30 is between 5 and 6. It is probably close to 5.5.**

### Pythagorean Theorem

We state **Pythagoras' theorem**:

- The square of the hypotenuse of a right-angled triangle is equal to the sum of the squares of the lengths of the other two sides.
- In symbols  $c^2 = a^2 + b^2$ .



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1. Which two integers is  $\sqrt{102}$  between?

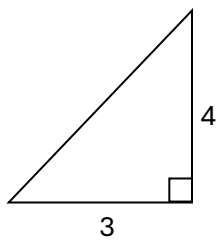
2. Estimate the following square roots.

a.  $\sqrt{21}$

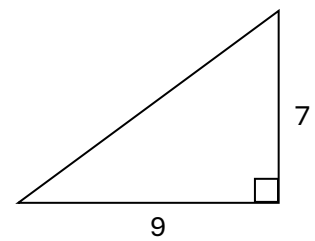
b.  $\sqrt{84}$

3. Find the length of the hypotenuse of the right triangles below.

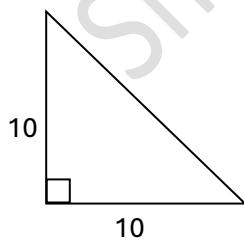
a)



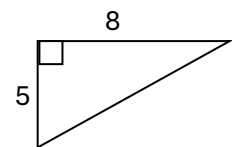
b)



c)



d)



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5. A ladder is leaning against the side of a 10m house. If the base of the ladder is 3m away from the house, how tall is the ladder? Draw a diagram and show all the work.

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

6. The lawn in front of Pythagoras Jr. High is in the shape of a rectangle 24 m long and 10 m wide. How many meters shorter is your walk if you walk diagonally across the lawn rather than along two sides of it?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

7. Lara drove 7 miles due east and then 24 miles due north. How far would she be from where she began?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

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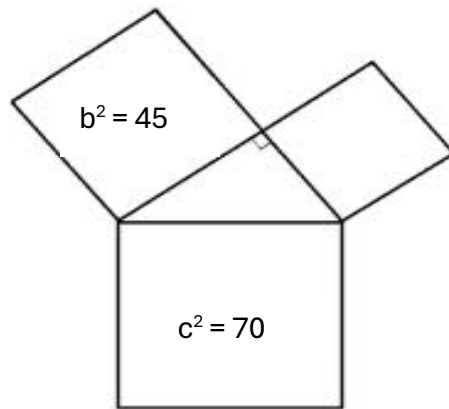
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8. Find the missing values below.

$$a^2 = \underline{\quad\quad} \quad a = \underline{\quad\quad}$$

$$b^2 = \underline{\quad\quad} \quad b = \underline{\quad\quad}$$

$$c^2 = \underline{\quad\quad} \quad c = \underline{\quad\quad}$$



9. The window of a burning building is 40 feet above ground. The base of a ladder is placed 9 feet from the building. How long must the ladder be to reach the window?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

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10. A rope is stretched from the top of a 7-foot tent pole to the ground 12 ft from the base of the pole. How long is the rope?

Show Your Work	Rough Work/Verify Work
Final Answer (With Units):	

11. Answer the following.

- a. The Pythagoras Theorem works only in \_\_\_\_\_ triangles.
- b. The longest side in a right triangle is called the \_\_\_\_\_.

12. Write 0.00072 in scientific notation.

- A.  $7.2 \times 10^{-4}$
- B.  $0.72 \times 10^{-3}$
- C.  $72 \times 10^{-5}$
- D.  $7.2 \times 10^4$

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13. A scatter plot shows a positive linear trend between hours studied and test score.

What does this mean?

- A. As study time increases, test scores decrease
- B. As study time increases, test scores increase
- C. There is no relationship
- D. The relationship is nonlinear

14. A triangle is graphed on a coordinate grid.

Which transformation will result in a figure that is **NOT congruent** to the original triangle?

- A. A rotation of  $180^\circ$  about the origin
- B. A reflection across the y-axis
- C. A translation 5 units to the right
- D. A dilation with a scale factor of 2 centred at the origin

15. The equation  $y = -4x + 7$  represents a linear function.

What does the number 7 represent?

- A. The slope
- B. The x-intercept
- C. The y-intercept
- D. The rate of change

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16. Rohan deposits **\$2,500** into a savings account.

His bank offers two accounts:

- **Account A** pays **3% simple annual interest**
- **Account B** pays **2.8% interest compounded annually**

Which statement about the accounts at the end of 4 years is true assuming no deposits or withdrawals are done for these 4 years?

- A. Account A would earn Rohan about **\$20 more interest** than Account B.
- B. Account B would earn Rohan about **\$20 more interest** than Account A.
- C. Account A would earn Rohan about **\$35 more interest** than Account B.
- D. Account B would earn Rohan about **\$35 more interest** than Account A.