Pythagorean Theorem & Distance Practice

Name: Grade: 8 Date:

Practice using the Pythagorean theorem and distance formula to solve real-world problems. Try the interactive mini-quizzes for instant feedback!

Quick Check

1) What is the Pythagorean theorem formula?

$c^2=a^2+b^2$ | $a^2=b^2+c^2$ | $a^2+b^2=c$

2) The Pythagorean theorem applies to which triangle?

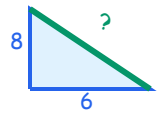
isosceles triangle | right triangle | equilateral triangle

3) What does the formula $\sqrt{((x_2-x_1)^2+(y_2-y_1)^2)}$ find?

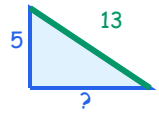
area | distance | perimeter

Part 1 · Pythagorean Theorem PYTHAGOREAN

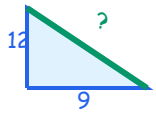
1. Find the hypotenuse if legs are 6 and 8.



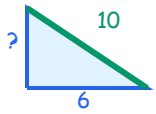
2. Find the missing leg if hypotenuse is 13 and one leg is 5.



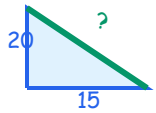
3. Find the hypotenuse if legs are 9 and 12.



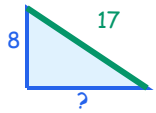
4. Find the missing leg if hypotenuse is 10 and one leg is 6.



5. Find the hypotenuse if legs are 15 and 20.



6. Find the missing leg if hypotenuse is 17 and one leg is 8.



Part 2 · Distance Formula DISTANCE

7. Find the distance between (0,0) and (3,4).

8. Find the distance between (2,5) and (6,8).

9. Find the distance between (−1,−1) and (4,3).

10. Find the distance between (7,2) and (7,9).

11. Find the distance between (−3,4) and (3,4).

12. Find the distance between (5,−2) and (1,−2).

Part 3 · Applications & Word Problems APPLY

13. A ladder is 12 ft from a wall and reaches 16 ft up. How long is the ladder?

14. A square has diagonal 10 cm. What is the side length?

15. A park is a rectangle 30 m by 40 m. What is the diagonal distance?

16. A triangle has legs 9 cm and 12 cm. What is the hypotenuse?

17. A ramp rises 6 ft over a run of 8 ft. What is the length of the ramp?

18. A rectangle has sides 5 cm and 12 cm. What is the diagonal?

Part 4 · Real World Practice REAL WORLD

19. School Path
The school is 9 blocks east and 12 blocks north from your house. What is the

shortest walking distance?

20. Soccer Field
The field is 50 m long and 30 m wide. What is the diagonal distance across the field?

21. Hiking Trail
The trail goes 8 km east and 15 km north. What is the straight-line distance?

22. Playground
The playground is 24 m by 7 m. What is the diagonal distance across?

23. TV Screen
A TV is 36 inches wide and 15 inches tall. What is the diagonal size?

Answer Key

1. 10
2. 12
3. 15
4. 8
5. 25
6. 15
7. 5
8. 5
9. $\sqrt{41} \approx 6.4$
10. 7
11. 6
12. 4
13. 20
14. 7.07
15. 50
16. 15
17. 10
18. 13
19. 15
20. 58
21. 17
22. 25
23. 39

Each question uses the Pythagorean theorem or distance formula in a real-life scenario. Encourage students to draw diagrams and show work.