

GCSE Maths: Surds: simplifying and adding (Higher): worksheet

GCSE Maths - Standard Form, Indices and Surds - Higher - Lesson 6.7

Name: _____

Date: _____

Score: _____

12 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch06-standard-form-indices-surds/higher/surds-simplifying-and-adding/

Exercise 60 Simplifying and adding surds Non-calculator

1 Is each of these a surd? Give a reason.

(a) $\sqrt{16}$

Answer:

(b) $\sqrt{7}$

Answer:

(c) $\sqrt{50}$

Answer:

(d) $\sqrt{81}$

Answer:

(e) $\sqrt{3}$

Answer:

2 Simplify each surd.

(a) $\sqrt{12}$

Answer:

(b) $\sqrt{18}$

Answer:

(c) $\sqrt{20}$

Answer:

(d) $\sqrt{45}$

Answer:

(e) $\sqrt{75}$

Answer:

(f) $\sqrt{72}$

Answer:

(g) $\sqrt{98}$

Answer:

(h) $\sqrt{200}$

Answer:

3 Simplify each expression.

(a) $3\sqrt{8}$

Answer:

(b) $2\sqrt{27}$

Answer:

(c) $5\sqrt{12}$

Answer:

(d) $4\sqrt{50}$

Answer:

(e) $7\sqrt{18}$

Answer:

4 Simplify each expression.

(a) $\sqrt{12} + \sqrt{27}$

Answer:

(b) $5\sqrt{2} - \sqrt{8}$

Answer:

(c) $3\sqrt{18} + \sqrt{32}$

Answer:

(d) $2\sqrt{20} - \sqrt{45}$

Answer:

(e) $\sqrt{75} + \sqrt{12} - \sqrt{3}$

Answer:

(f) $\sqrt{12} - \sqrt{5}$

Answer:

5 Write each in its simplest form.

(a) $\sqrt{\frac{2}{9}}$

Answer:

(b) $\sqrt{\frac{8}{25}}$

Answer:

(c) $\sqrt{\frac{3}{16}}$

Answer:

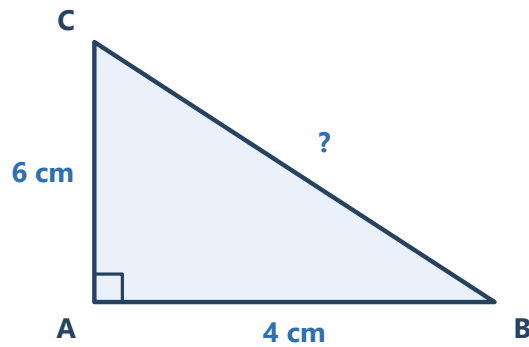
(d) $\sqrt{\frac{12}{49}}$

Answer:

6 A rectangle has sides $\sqrt{18}$ cm and $\sqrt{8}$ cm. Work out the exact perimeter in its simplest form.

Answer:

7 Find the exact length of the third side of each right-angled triangle. Simplify your answers.



- (a) shorter sides 4 cm and 6 cm; find the hypotenuse

Answer:

- (b) shorter sides 3 cm and 3 cm; find the hypotenuse

Answer:

- (c) hypotenuse 7 cm, one side 3 cm; find the other side

Answer:

- 8** Show that $\sqrt{72} = 6\sqrt{2}$.

Answer:

- 9** Is $\sqrt{2} + \sqrt{3}$ equal to $\sqrt{5}$? Use decimals to explain.

Answer:

- 10** Explain why $\sqrt{16}$ is not a surd, but $\sqrt{18}$ is.

Answer:

- 11** Show that $(\sqrt{12})^2 = (2\sqrt{3})^2 = 12$.

Answer:

- 12** Write $\sqrt{20}$, 4.5 and $3\sqrt{2}$ in order, smallest first. Show your working.

Answer: