

1.6 Homework

A-Level Pure Mathematics : Year 1
GCSE (Grades 8 and 9)

Algebra of Surds and Indices I

*Any solution based entirely on graphical
or numerical methods is not acceptable*

Marks Available : 24

Do NOT use a calculator

Question 1

Use the fact that $405 = 3^4 \times 5$ to write $\sqrt{405}$ in the form $a\sqrt{p}$

where a and p are integers

and p is \square FREE. (And also, in this case, prime)

[2 marks]

Question 2

Write each of the following in the form $a\sqrt{p}$

where a & p are integers

and p is \square FREE. (And also, in these cases, prime)

(i) $\sqrt{44}$

(ii) $\sqrt{50}$

(iii) $\sqrt{32}$

(iv) $\sqrt{99}$

(v) $\sqrt{200}$

(vi) $\sqrt{162}$

[6 marks]

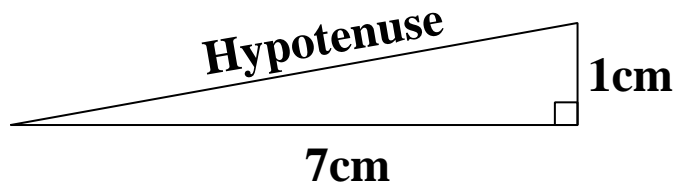
Question 3

Find the *exact* length of the hypotenuse of a right-angled Δ of base 7 cm and height 1 cm.

Write your answer in the form $a\sqrt{p}$

where a and p are integers

and p is FREE. (and also, in this case, prime)



[3 marks]

Question 4

Find the *exact* length of the hypotenuse of a right angled Δ of base 6 cm and height 2 cm.

Write your answer in the form $a\sqrt{f}$

where a and f are integers

and f is FREE. (Note: f is not prime)

[3 marks]

Question 5

Find the *exact* length of the hypotenuse of a right-angled Δ of base 10 cm and height 4 cm.

Write your answer in the form $a\sqrt{p}$

where a and p are integers

and p is \square FREE. (In this case, p is prime)

[3 marks]

Question 6

Find the *exact* length of the hypotenuse of a right-angled Δ of base 13 cm and height 9 cm.

Write your answer in the form $a\sqrt{f}$

where a and f are integers

and f is \square FREE. (Note: f is not prime)

[3 marks]

Question 7

Find the *exact* length of the hypotenuse of a right-angled Δ of base 15 cm and height 9 cm.

Write your answer in the form $a\sqrt{f}$

where a and f are integers

and f is \square FREE. (Note: f is not prime)

[4 marks]

DECLARATION:

I, _____, being of sound body and brain,
do declare that I have not used a calculator in answering any of these questions.

Nor did I look to the left nor the right, at my neighbours answers.
(which would have been wrong anyway)

Furthermore, I love maths.

Signed: _____

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk