



THIRD SPACE
LEARNING

GCSE Exam Questions

Factor Trees | Number

GCSE Exam Questions: Factor Trees

- 1) (a) Write the number 260 as a product of prime factors in index form.

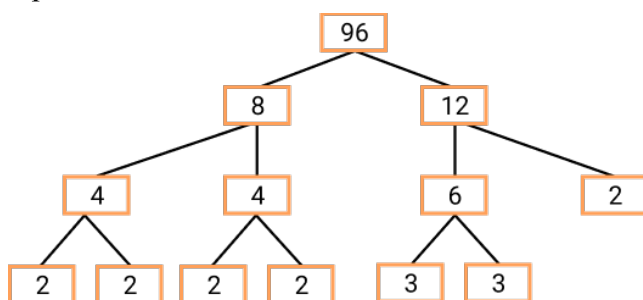
(3)

- (b) Hence or otherwise write 260^2 in index form.

(1)

(4 marks)

- 2) (a) Jake is trying to answer this question: Express the number 96 as a product of prime factors. His answer is shown below.



$$96 = 2, 2, 2, 2, 3, 3, 2$$

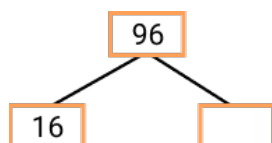
Has Jake calculated the answer correctly?

Explain your answer.

(4)

- (b) Complete the different factor tree for the number 96 below.

The start of the diagram has been drawn for you:



(4)

(8 marks)

GCSE Exam Questions: Factor Trees

3) (a) Show that 225 is a square number.

(3)

(b) Let $N = 2 \times 3 \times 7$. Write $3N^2$ as a product of prime factors in index form.

(2)
(5 marks)

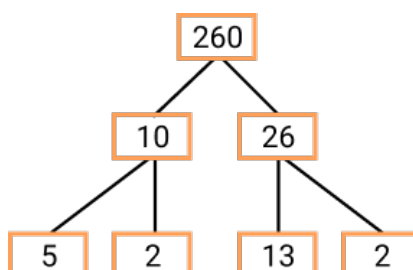
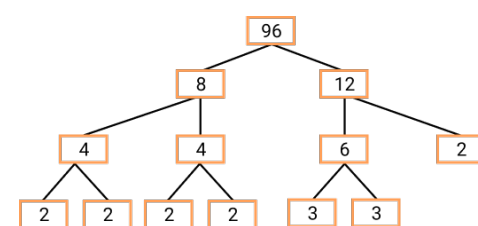
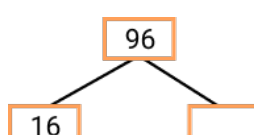
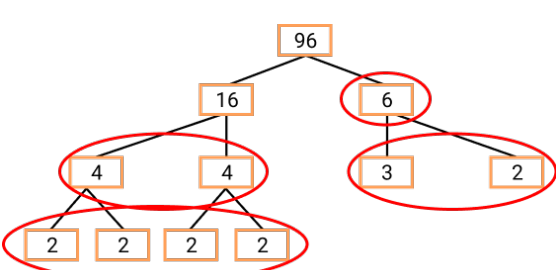
4) (a) Express 60 as a product of prime factors.

(2)

(b) Simplify $\sqrt{60}$.

(3)
(5 marks)

GCSE Exam Questions: Factor Trees Answers

	Question	Answer	Marks
1) (a)	Write the number 260 as a product of prime factors in index form.	(a)  $260 = 2 \times 2 \times 5 \times 13$ $260 = 2^2 \times 5 \times 13$	(1) (1) (1)
(b)	Hence or otherwise write 260^2 in index form.	(b) $260^2 = 2^4 \times 5^2 \times 13^2$	(1)
2) (a)	Jake is trying to answer this question: Express the number 96 as a product of prime factors. His answer is shown below.  $96 = 2, 2, 2, 2, 3, 3, 2$ Has Jake calculated the answer correctly? Explain your answer.	(a) No. Factors of 6 are incorrect (should be 2 and 3) Factors of 8 are incorrect (should be 4 and 2) The prime factors should be multiplied, not listed ($96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$ or $2^5 \times 3$)	(1) (1) (1) (1)
(b)	Complete the different factor tree for the number 96 below. The start of the diagram has been drawn for you: 	(b) 	(4)
3) (a)	Show that 225 is a square number.	(a) $225 = 15 \times 15 = 3 \times 5 \times 3 \times 5$ $= (3 \times 5) \times (3 \times 5)$ $= (3 \times 5)^2$	(1) (1) (1)

GCSE Exam Questions: Factor Trees Answers

	Question	Answer	Marks
(b)	Let $N = 2 \times 3 \times 7$. Write $3N^2$ as a product of prime factors in index form.	(b) $N^2 = 2^2 \times 3^2 \times 7^2$ $3N^2 = 2^2 \times 3^3 \times 7^2$	(1) (1)
4) (a)	Express 60 as a product of prime factors.	(a) $60 = 2 \times 3 \times 2 \times 5$ $60 = 2^2 \times 3 \times 5$	(1) (1)
(b)	Simplify $\sqrt{60}$	(b) $\sqrt{60} = \sqrt{2^2 \times 3 \times 5}$ $= \sqrt{2^2} \times \sqrt{3 \times 5}$ $= 2\sqrt{15}$	(1) (1) (1)

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