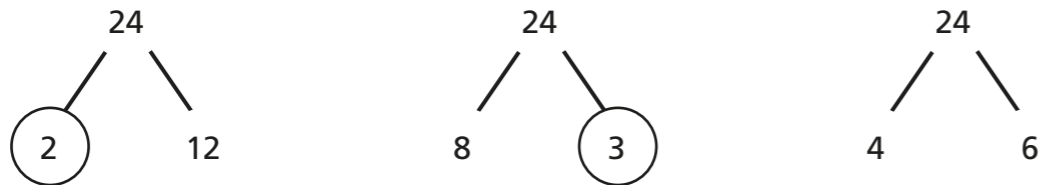


Write a number as a product of its prime factors

1 a) Complete the factor trees for the number 24



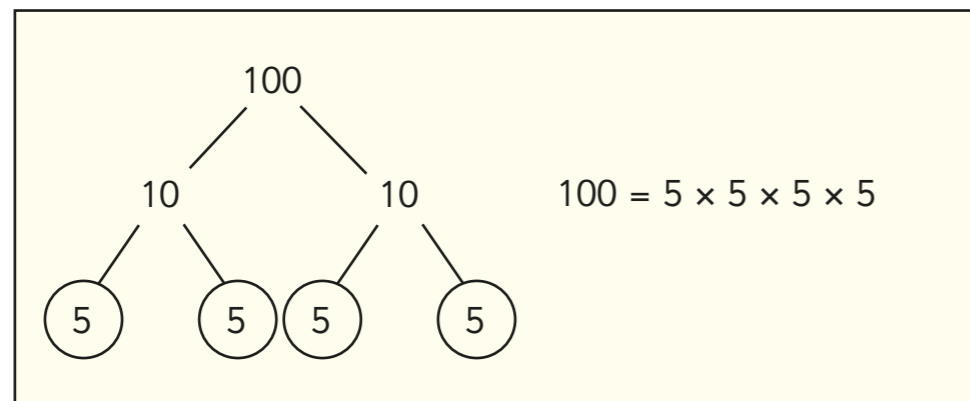
b) What is 24, as a product of its prime factors?

$$24 = \square \times \square \times \square \times \square$$

c) Discuss with a partner what you notice about your factor trees in part a).

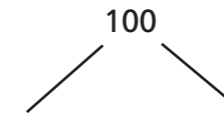


2 Scott completes a factor tree for the number 100



a) What mistake has he made?

b) Correct Scott's mistake.



$$100 = \square \times \square \times \square \times \square$$

3 Complete a factor tree for each number.

Write each number as a product of its prime factors.

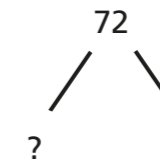
a) 80

b) 68

$$80 = \underline{\hspace{2cm}}$$

$$68 = \underline{\hspace{2cm}}$$

4 a) What number could replace the question mark in the factor tree?



b) Discuss your answer with a partner.

Is there more than one solution?

c) Write 72 as a product of its prime factors.

$$72 = \underline{\hspace{2cm}}$$



5 Write the numbers as products of their prime factors.

- a) $9 =$ _____ b) $8 =$ _____
 $18 =$ _____ $32 =$ _____
 $36 =$ _____ $64 =$ _____
 $81 =$ _____ $128 =$ _____

What do you notice about your answers?

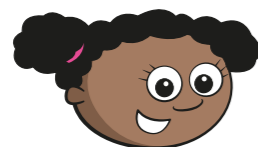
6 Four numbers have been written on cards as the product of their prime factors.

$$2 \times 3 \times 3 \times 5$$

$$2 \times 2 \times 2 \times 3 \times 5$$

$$2 \times 3 \times 5 \times 5$$

$$2 \times 2 \times 3 \times 5$$



The greatest number is the second card, as that has the most prime factors.

a) Do you agree with Whitney? _____

Explain your answer.

b) Write the numbers in ascending order.

7 Dani works out $450 = 2 \times 3 \times 3 \times 5 \times 5$

Use this information to write these numbers as a product of their prime factors.

- $900 =$ _____ $225 =$ _____
 $4,500 =$ _____ $150 =$ _____

8 A number has been written as the product of its prime factors.

The answer is $2^2 \times 3 \times 11^2$

Is 66 a factor of this number? _____

Explain how you know.

9 a)

f and g are prime numbers.
 $5fg = 275$ and $g > f$

What is the value of g ?

$$g = \boxed{}$$

b)

$192 = 2^a b$
 a and b are prime numbers.

Find the values of a and b .

$$a = \boxed{} \quad b = \boxed{}$$

c)

495 can be written as c^2de .

What are the values of c , d and e ?

$$c = \boxed{} \quad d = \boxed{} \quad e = \boxed{}$$

10

$$A = 5^2 \times 7^2 \times 11^3 \times 13$$

$$B = 5^2 \times 7^3 \times 11^3 \times 13$$

How many times greater is B than A ? _____

Explain how you know.
