

Name:

Powers

and Roots

Additional Tasks





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Quiz 1



1) List all the factors of 24.

2) 6^2

3) 4^3

4) $1296 \div 6$

5) $\sqrt{49}$

6) $\sqrt[3]{125}$

7) $8 + -2$

8) $8 - -2$

9) 8×-2

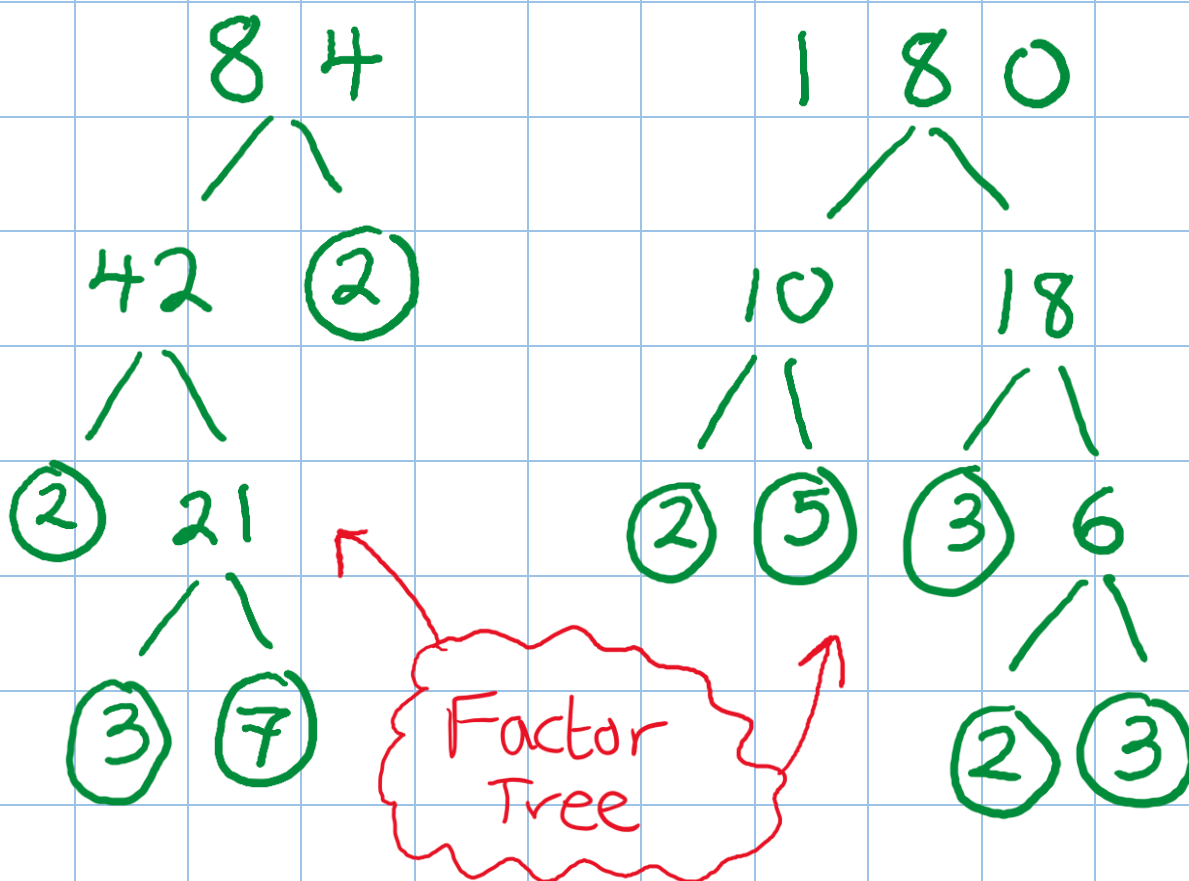
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Example 1



Write 84 and 180 as a product of their prime factors, in index form.



$$84 = 2 \times 2 \times 3 \times 7 \quad 180 = 2 \times 2 \times 3 \times 3 \times 5$$

$$84 = 2^2 \times 3 \times 7 \quad 180 = 2^2 \times 3^2 \times 5$$



Quiz 2



1) List all the factors of 36.

2) 5^2

3) 2^3

4) 343×7

5) $\sqrt{64}$

6) $\sqrt[3]{64}$

7) $-5 + 3$

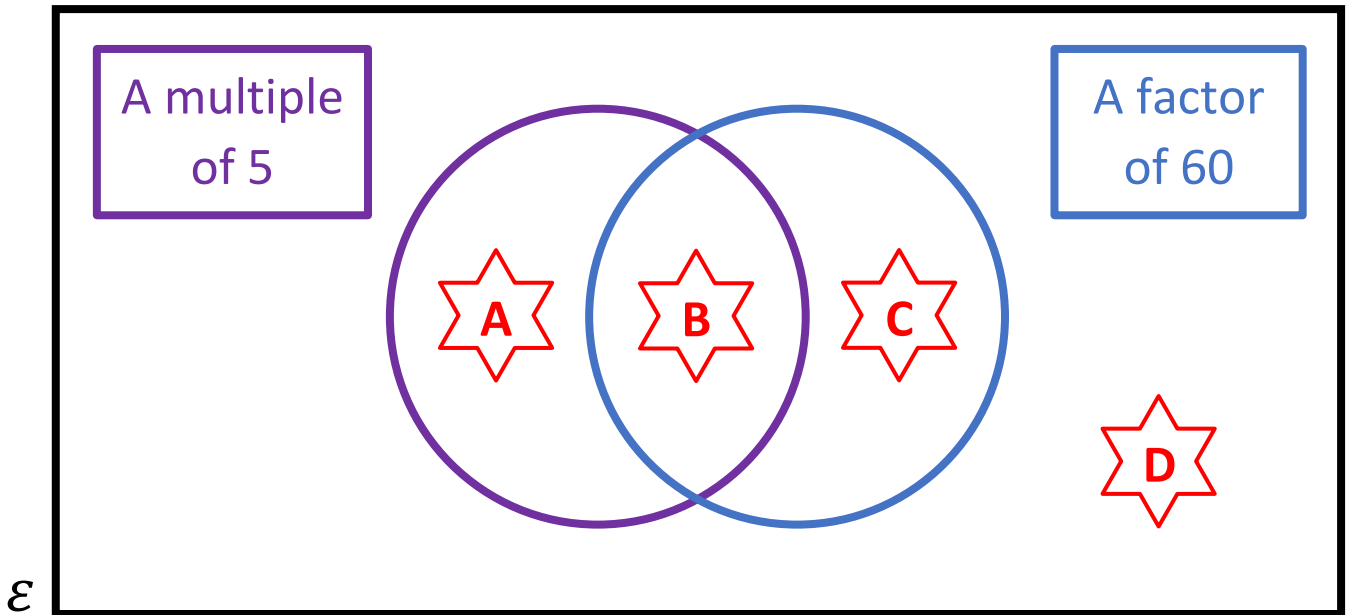
8) $-5 - 3$

9) -5×-3

___ out of 9



Venn Diagram Challenge 1



Think of a number that could fit into each region.
 If you think a region is impossible to fill, explain why!







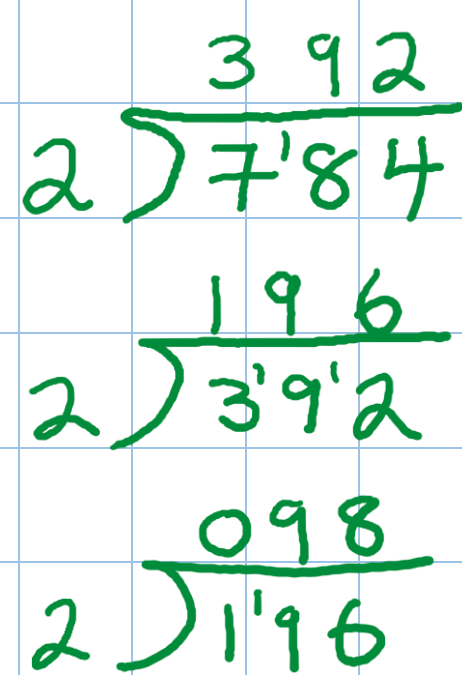
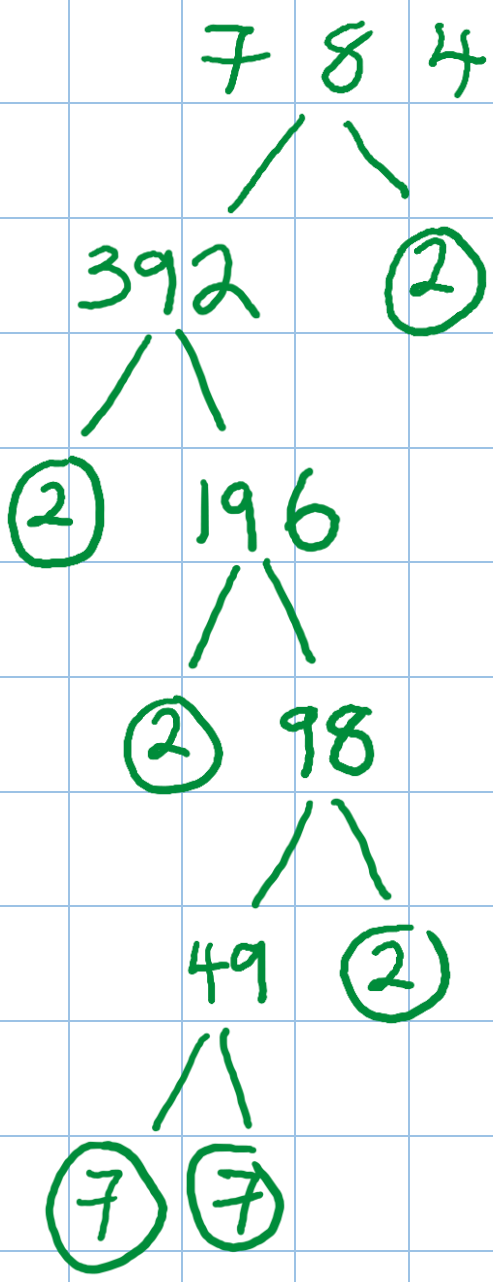




Example 2



Without using a calculator, find the square root of 784.



$$\begin{aligned}
 784 &= 2 \times 2 \times 2 \times 2 \times 7 \times 7 \\
 784 &= 2^4 \times 7^2 \\
 \sqrt{784} &= 2^2 \times 7^1 \\
 \sqrt{784} &= 4 \times 7 \\
 \sqrt{784} &= 28
 \end{aligned}$$

halve the powers



Quiz 3



1) $\sqrt{81}$

2) $\sqrt[3]{8}$

3) $\sqrt[4]{16}$

4) $\sqrt{16}$

5) $\sqrt[3]{216}$

6) $\sqrt[4]{81}$

7) $\sqrt[3]{1}$

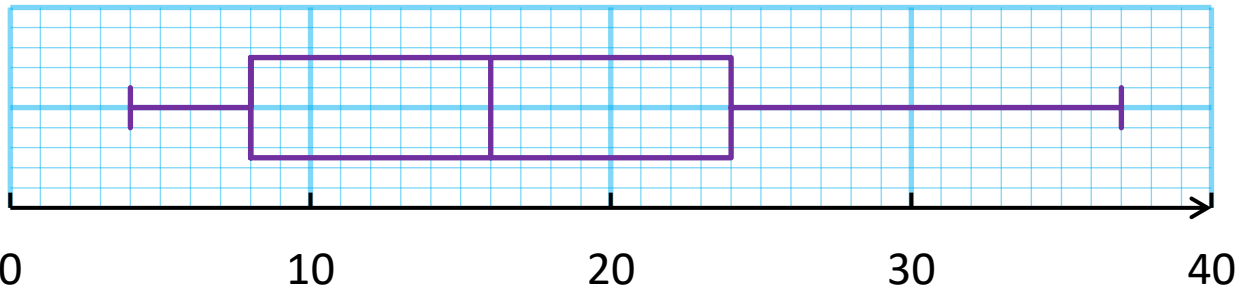
8) $\sqrt[4]{625}$

9) $\sqrt[5]{32}$

___ out of 9



Quiz 4



Use the above box and whisker diagram to find the following statistics.

1) The median

2) The least value

3) The greatest value

4) The range

5) The lower quartile

6) The interquartile range

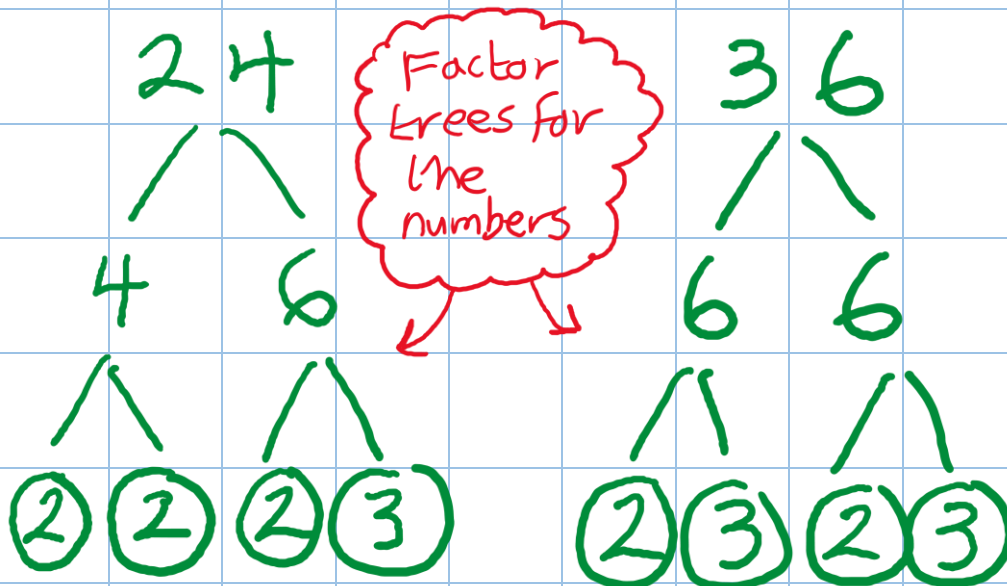
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Example 3



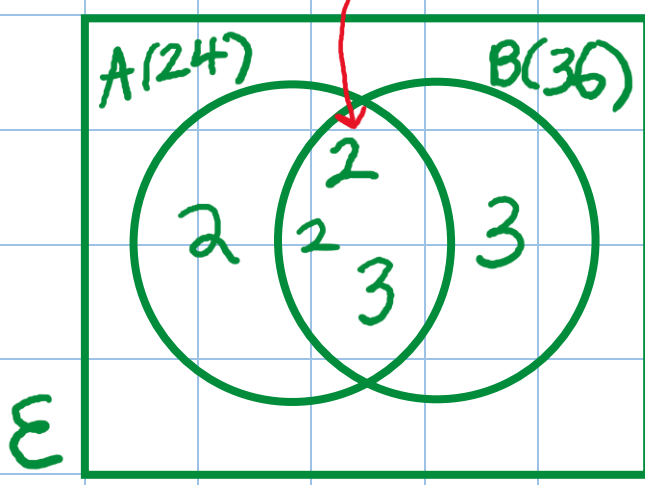
What is the highest common factor and lowest common multiple of the numbers 24 and 36?



$24 = 2 \times 2 \times 2 \times 3$ $36 = 2 \times 2 \times 3 \times 3$

Common numbers in the middle

Multiply the numbers in the middle



H.C.F. = $2 \times 2 \times 3$
 = 12

L.C.M. = $2 \times 2 \times 2 \times 3 \times 3$
 = 24×3
 = 72

number in the Venn diagram



Quiz 5



1) $930 + 4200$

2) $6000 - 870$

3) $54000 - 7005$

4) 10% of £75

5) 50% of 46 cm

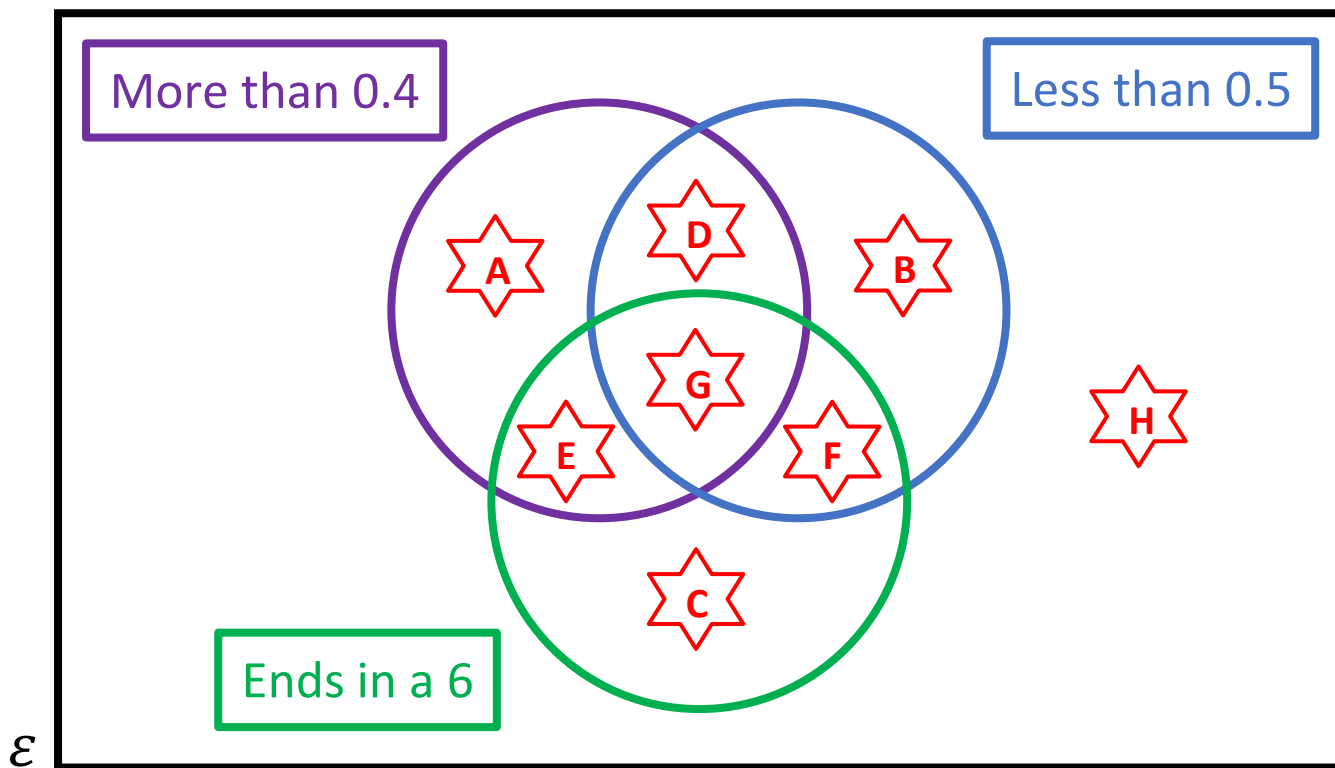
6) 20% of \$90

7) If $x = 4$, what is the value of $6x$?8) If $y = 3$, what is the value of y^2 ?9) If $z = 5$, what is the value of $2z^2$?

___ out of 9



Venn Diagram Challenge 2



Think of a number that could fit into each region.
 If you think a region is impossible to fill, explain why!

| | | | |
|-----|--|-----|--|
| ★ A | | ★ E | |
| ★ B | | ★ F | |
| ★ C | | ★ G | |
| ★ D | | ★ H | |



Example 4



Without using a calculator, calculate 83% of £68.

10% £ 6.80

1% £ 0.68

÷10

÷10

80%

Multiply 10% by 8

3%

Multiply 1% by 3

6.80

0.68

$$\begin{array}{r} \times \quad 8 \\ \hline 54.40 \\ \hline \end{array}$$

$$\begin{array}{r} \times \quad 3 \\ \hline 2.04 \\ \hline \end{array}$$

6

2 2

83%

54.40

$$\begin{array}{r} + \quad 2.04 \\ \hline \pounds 56.44 \\ \hline \hline \end{array}$$

Add 80% to 3%

Final answer



Quiz 6



Substitute $x = 3$ into the following expressions.

1) $4x$

2) $-6x$

3) $\frac{x}{2}$

4) x^2

5) $2x^2$

6) $(2x)^2$

7) x^3

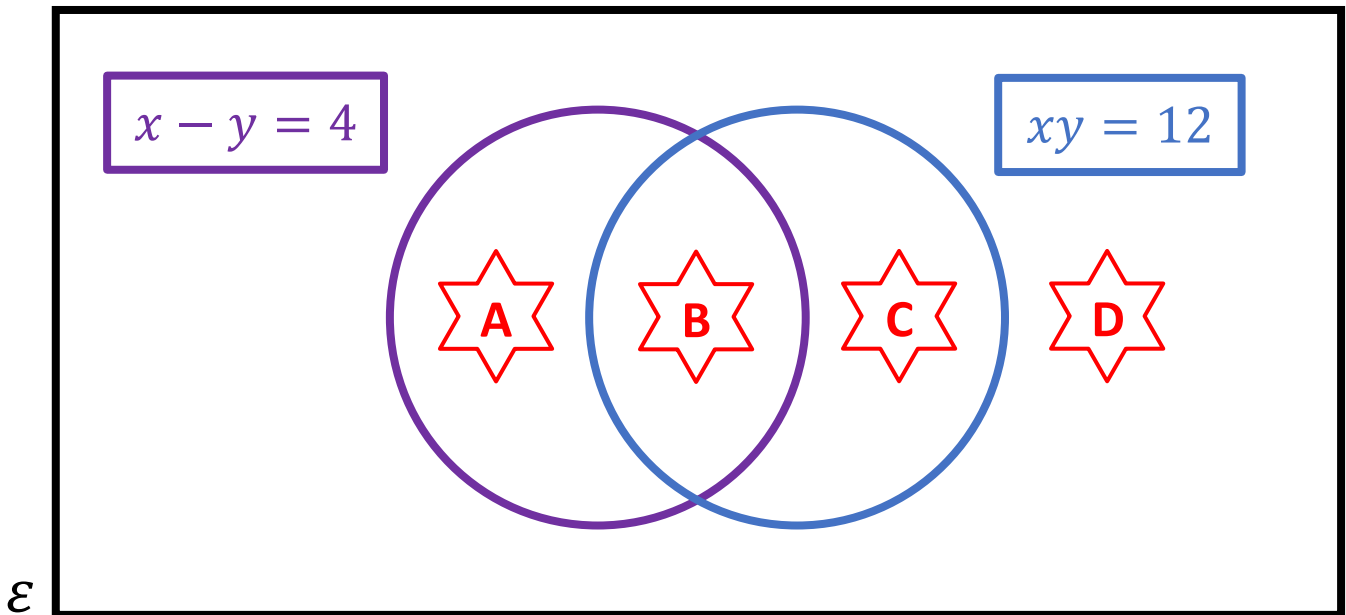
8) $5x^3$

9) $5x - 2$

___ out of 9



Venn Diagram Challenge 3



Think of values for x and y that could fit into each region. If you think a region is impossible to fill, explain why!

| | |
|--|--|
| | |
| | |
| | |
| | |

Evaluating the Workbook



Notes

