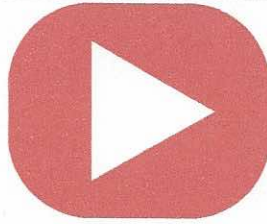


Rational and Irrational Numbers

Video 230 on Corbettmaths

Examples



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Workout

Question 1: Write down 3 rational numbers $4, \frac{1}{2}, 0.8$

Question 2: Write down 3 irrational numbers $\sqrt{2}, \pi, \sqrt{101}$

Question 3: List any irrational numbers from the box below

8	π	$\frac{2}{3}$	$\sqrt{4}$
$\frac{1}{2}$	$\sqrt{5}$	0.1	

$\pi, \sqrt{5}$

Question 4: Write down an irrational number between 4 and 6. $\sqrt{20}, \sqrt{35}$ etc.

Question 5: Write down an irrational number between 3 and 4. $\pi, \sqrt{10}, \sqrt{15}$ etc.

Question 6: Write down an irrational number between 6 and 7. $\sqrt{37}, \sqrt{45}$ etc.

Question 7: \sqrt{y} is a rational number between $\sqrt{33}$ and $\sqrt{50}$

Find a value for y. 49

Question 8: \sqrt{z} is a rational number between $\sqrt{125}$ and $\sqrt{150}$

Find a value for z. 144

Question 9: $\sqrt[3]{a}$ is a rational number between $\sqrt[3]{100}$ and $\sqrt[3]{200}$

Find a value of a. 125

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Apply

Question 1: Hannah says "all integers are rational."

Is Hannah correct? *Yes*

Question 2: Kate says "0.3333... is irrational because it is a recurring decimal."

Is Kate correct? *No* $0.\dot{3} = \frac{1}{3}$

Question 3: Does this equation have rational or irrational solutions?

$$\frac{2}{3}x^2 = 40 \quad \begin{array}{l} 2x^2 = 120 \\ x^2 = 60 \\ x = \sqrt{60} \end{array} \quad \text{irrational}$$

Question 4: The equation below can have rational or irrational solutions.

$$5x^2 = k$$

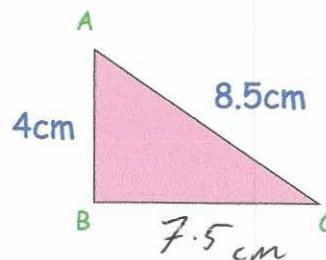
(a) Write down a value for k which gives rational solutions. *1.8*

(b) Write down a value for k which gives irrational solutions. *2*

Question 5: ABC is a right angled triangle.

Is the length BC rational or irrational?

rational



Question 6: Show $(7 - \sqrt{2})(7 + \sqrt{2})$ is rational $49 + 7\sqrt{2} - 7\sqrt{2} - 2 = 47$

Question 7: Find two surds that when multiplied together give a rational answer. $\sqrt{3}$ and $\sqrt{12}$

Question 8: Show $\frac{2\sqrt{27}}{5\sqrt{3}}$ is rational $\frac{2\sqrt{9}}{5} = \frac{6}{5}$

Answers

