

Question 1. (AQA June 2004 Intermediate Paper 2 Calculator OK)

<p>(a) <math>k</math> is an even number. Jo says that <math>\frac{1}{2}k + 1</math> is always even. Give an example to show that Jo is wrong.</p>	<p>(b) The letters <math>a</math> and <math>b</math> represent prime numbers. Give an example to show that <math>a + b</math> is <b>not</b> always an even number.</p>
[1 mark]	[1 mark]

Question 2. (AQA June 2006 Intermediate Paper 2 Calculator OK)

Hassan says



When you square a positive number the answer is **always** bigger than the original number.

For example  $2.5^2 = 6.25$  and  $6.25$  is bigger than  $2.5$

Find an example to show that Hassan is wrong.  
You **must** show your working.

[2 marks]

Question 3. (AQA June 2003 Intermediate Paper 1 NO Calculator)

<p><math>p</math> is an odd number. Explain why <math>p^2 + 1</math> is always an even number.</p>	
[2 marks]	

Question 4. (AQA June 2004 Intermediate Paper 1 NO Calculator)

<p>Tom, Sam and Matt are counting drum beat. Tom hits a snare drum every 2 beats. Sam hits a kettle drum every 5 beats. Matt hits a bass drum every 8 beats.</p> <p>They start by hitting their drums at the same time.</p>	<p>How many beats is it before Tom, Sam and Matt <b>next</b> hit their drums at the <b>same</b> time?</p>
	[2 marks]

Question 5. (AQA November 2004 Intermediate Paper 2 Calculator OK)

<p><math>P</math> is a prime number. <math>Q</math> is an odd number. State whether each of the following is always odd or always even or could be either odd or even. Tick the appropriate box.</p>		
<p>(a) <math>P(Q + 1)</math></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"><input type="checkbox"/> Always odd</div> <div style="text-align: center;"><input type="checkbox"/> Always even</div> <div style="text-align: center;"><input type="checkbox"/> Could be either odd or even</div> </div> <p style="text-align: right;">(1 mark)</p>		
<p>(b) <math>Q - P</math></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"><input type="checkbox"/> Always odd</div> <div style="text-align: center;"><input type="checkbox"/> Always even</div> <div style="text-align: center;"><input type="checkbox"/> Could be either odd or even</div> </div> <p style="text-align: right;">(1 mark)</p>		

Question 6. (AQA June 2003 Intermediate Paper 1 NO Calculator)

<p>(a) Work out the value of <math>5^7 \div 5^4</math></p>	<p>(b) <math>a</math> and <math>b</math> are prime numbers. <math>ab^3 = 54</math> Find the values of <math>a</math> and <math>b</math>.</p>
[2 marks]	[2 marks]
<p>(c) Find the Highest Common Factor (HCF) of 54 and 135.</p>	
[2 marks]	

Question 7. (AQA June 2005 Intermediate Paper 1 NO Calculator)

<p>(a) Write 18 as the product of its prime factors.</p>	<p>(b) What is the least common multiple (LCM) of 12 and 18?</p>
[2 marks]	[1 mark]