

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

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

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

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

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| <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 next hit their drums at the same time?</p> |
| | [2 marks] |

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

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| <p>P is a prime number. Q 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) $P(Q + 1)$</p> <p style="text-align: center;"> <input type="checkbox"/> Always odd <input type="checkbox"/> Always even <input type="checkbox"/> Could be either odd or even </p> <p style="text-align: right;">(1 mark)</p> | | |
| <p>(b) $Q - P$</p> <p style="text-align: center;"> <input type="checkbox"/> Always odd <input type="checkbox"/> Always even <input type="checkbox"/> Could be either odd or even </p> <p style="text-align: right;">(1 mark)</p> | | |

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

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| <p>(a) Work out the value of $5^7 \div 5^4$</p> | <p>(b) a and b are prime numbers. $ab^3 = 54$ Find the values of a and b.</p> |
| [2 marks] | [2 marks] |
| <p>(c) Find the Highest Common Factor (HCF) of 54 and 135.</p> <p style="text-align: right;">[2 marks]</p> | |

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

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| <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] |