1.1 Number: Integers and Powers: 30-minute Pack

Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Work out $10^2 - 5^3 + 5^2$.

(2)

2 Write down all the factors of 30.

(2)

3 Work out 527 x 13.

(3)

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4 Work out the value of each calculation.

(a) -4 x 6 **(1)**

(b) -3 x -7 **(1)**

(c) -36 / 4 **(1)**

(d) -45 / -9 **(1)**

5 Write $(7^7 \times 7^4) \div 7^5$ as a single power of 7.

(2)

6 Write $(2^5)^5$ as a single power of 2.

(1)

7 Write $9^9 \div 9^7$ as a single power of 9.

(1)

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8 Factors of a number divide into it exactly.

(a) List all the factors of 84. **(2)**

(b) Using your list, or otherwise, find the highest common factor of 84 and 60. **(2)**

9 Simplify each expression, writing your answer as a single power. Do not evaluate.

(a) $3^2 \times 3^4$ **(1)**

(b) $5^3 \times 5^1$ **(1)**

(c) $2^5 \times 2^2$ **(1)**

10 Prime factors can be used to find the highest common factor (HCF) of two numbers. Write 60 and 84 as products of their prime factors, and hence find the HCF of 60 and 84.

(3)

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Mark scheme · 1.1 Number: Integers and Powers: 30-minute Pack

Question 1

100, 125, 25 all evaluated	M1
0 cao	A1

Answer: **0**

Question 2

at least half of the factors correct, with no more than one incorrect value	M1
1, 2, 3, 5, 6, 10, 15, 30 cao	A1

Answer: **1, 2, 3, 5, 6, 10, 15, 30**

Question 3

one correct partial product, eg 527 x 3 = 1581 or 527 x 10 = 5270	M1
both partial products attempted and added	M1
6851 cao	A1

Answer: **6851**

Question 4

(a) -24 cao	B1

(a) Answer: **-24**

(b) 21 cao	B1

(b) Answer: **21**

(c) -9 cao	B1

(c) Answer: **-9**

(d) 5 cao	B1

(d) Answer: **5**

Question 5

uses the laws of indices correctly for one stage	M1
7^6 cao	A1

Answer: **7^6**

Question 6

2^{25} cao	B1

Answer: **2^{25}**

Question 7

9^2 cao	B1

Answer: **9^2**

Question 8

(a) at least 8 of the 12 correct factors listed	B1
(a) fully correct list 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84 cao	B1

(a) Answer: **1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84**

(b) identify the common factors of 84 and 60, e.g. 1, 2, 3, 4, 6, 12 (ft)	M1
(b) 12 cao (ft)	A1

(b) Answer: **12**

Question 9

(a) 3^6 cao	B1

(a) Answer: **3^6**

(b) 5^4 cao	B1

(b) Answer: **5^4**

(c) 2^7 cao	B1

(c) Answer: **2^7**

Question 10

$60 = 2^2 \times 3 \times 5$	M1
$84 = 2^2 \times 3 \times 7$	M1
HCF = $2^2 \times 3 = 12$ cao	A1

Answer: **12**

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