1.6 Factors, Multiples, HCF and LCM: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Apply knowledge of factors to solve a word problem.

(a) A class of 30 pupils are split into equal groups so that each group has the same number of pupils and there are at least 3 groups. What are all the possible group sizes? **(3)**

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2 Challenge: combine HCF and LCM properties.

(a) Two numbers have HCF 4 and LCM 48. One number is 12. Find the other number and show your working. **(4)**

.....

3 Write down all the factors of 105.

(2)

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4 Find the highest common factor (HCF) of 84 and 28.

(3)

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5 Find the lowest common multiple (LCM) of 8 and 20.

(3)

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6 Write down the first two common multiples of 12 and 6.

(2)

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7 Write 63 as a product of its prime factors. Give your answer in index form where possible.

(3)

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8 Write each number as a product of prime factors.

(a) Write 18 as prime factors. **(1)**

(b) Write 28 as prime factors. **(1)**

(c) Write 45 as prime factors. **(1)**

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Mark scheme · 1.6 Factors, Multiples, HCF and LCM: 30-minute Pack

Question 1

(a) correct factors of 30 listed or considered	M1
(a) exclude arrangements with fewer than 3 groups (so group sizes giving 1 or 2 groups removed)	M1
(a) correct final list: 1, 2, 3, 5, 6, 10	A1

(a) Answer: **Group sizes: 1, 2, 3, 5, 6, 10**

Question 2

(a) use property that product of numbers = HCF x LCM when numbers are positive integers with given HCF and LCM	M1
(a) compute product = 4 x 48 = 192 or compute other number = (HCF x LCM) / given number	M1
(a) correct division: other number = 192 / 12	M1
(a) other number = 16 cao	A1

(a) Answer: **16**

Question 3

at least half of the factors correct, with no more than one incorrect value	M1
1, 3, 5, 7, 15, 21, 35, 105 cao	A1

Answer: **1, 3, 5, 7, 15, 21, 35, 105**

Question 4

factors of 84 or 28 listed (or prime factorisation attempted)	M1
common factors or common prime factors identified	M1
28 cao	A1

Answer: **28**

Question 5

multiples of 8 or 20 listed, or prime factors found	M1
a common multiple identified	M1
40 cao	A1

Answer: **40**

Question 6

multiples of 12 and 6 listed or LCM = 12 found	M1
12, 24 cao	A1

Answer: **12, 24**

Question 7

a factor tree or repeated division by primes started correctly, eg 63 = 3 x 21	M1
all prime factors found: 3 x 3 x 7	M1
3^2 x 7 cao	A1

Answer: **3^2 x 7**

Question 8

(a) 2 x 3 x 3 or 2 x 3^2 cao	B1

(a) Answer: **2 x 3 x 3**

(b) 2 x 2 x 7 or 2^2 x 7 cao	B1

(b) Answer: **2 x 2 x 7**

(c) 3 x 3 x 5 or 3^2 x 5 cao	B1

(c) Answer: **3 x 3 x 5**

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