Factors, Multiples and Primes - Worksheet

Skill

Group A - Factors

List the factors for the following numbers:

1) 14 **2)** 15 **3)** 18

4) 22 **5)** 24 **6)** 27

7) 35 **8)** 36 **9)** 39

10) 42 **11)** 45 **12)** 49

Group B - Multiples

Write the first 4 multiples of the following numbers:

1) 10 **2)** 12 **3)** 15

4) 21 **5)** 22 **6)** 25

7) 30 **8)** 35 **9)** 36

10) 40 **11)** 45 **12)** 50

Group C - Prime factorisation

Write these numbers as a product of their prime factors:

1) 12 **2)** 15 **3)** 18

4) 21 **5)** 24 **6)** 28

7) 34 **8)** 35 **9)** 36

10) 40 **11)** 45 **12)** 46

Factors, Multiples and Primes - Worksheet

Applied

1) **(a)** Find the highest common factor of 18 and 24.

(b) Find the lowest common multiple of 18 and 24.

2) The number 420 can be expressed in the form $2^a \times 3 \times 5 \times b$, where a and b are integers.

(a) Find a and b.

(b) Write 420×6 as a product of prime factors.

3) **(a)** Find the highest common factor of 84 and 96.

(b) Find the lowest common multiple of 84 and 96.

4) a and b are positive integers where $a < b$.
The highest common factor of a and b is 7.
The lowest common multiple of a and b is 42.

(a) Find the values of a and b.

a and b are positive integers where $a < b$.
The highest common factor of a and b is 6.
The lowest common multiple of a and b is 180.

(b) Find the values of a and b.

5) **(a)** Find the highest common factor of $20,\ 28$ and 36.

(b) Find the lowest common multiple of $20,\ 28$ and 36.

Factors, Multiples and Primes - Exam Questions

1) **(a)** Write down a multiple of 11 between 50 and 100.

.....

(1)

(b) Write down two factors of 105 that are prime numbers.

..... and .....

(2)

(3 marks)

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2) Find the lowest common multiple of 16 and 20.

.....

(2 marks)

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3) **(a)** Patrick is making hot dogs for a party. Bread rolls are sold in packs of 6 and hot dog sausages are sold in packs of 8. Patrick wants to buy enough to make between 110 and 130 hot dogs with no leftovers.

How many of each item should he buy?

.....packs of bread .....packs of sausages

(5 marks)

Factors, Multiples and Primes - Exam Questions

4) Find the highest common factor of $30x^2y$ and $45x^2y^3$.

.....

(2 marks)

Factors, Multiples and Primes - Answers

	Question	Answer
	Skill Questions	
Group A	List the factors for the following numbers: **1)** 14 **2)** 15 **3)** 18 **4)** 22 **5)** 24 **6)** 27 **7)** 35 **8)** 36 **9)** 39 **10)** 42 **11)** 45 **12)** 49	**1)** 1, 2, 7, 14 **2)** 1, 3, 5, 15 **3)** 1, 2, 3, 6, 9, 18 **4)** 1, 2, 11, 22 **5)** 1, 2, 3, 4, 6, 8, 12, 24 **6)** 1, 3, 9, 27 **7)** 1, 5, 7, 35 **8)** 1, 2, 3, 4, 6, 9, 12, 18, 36 **9)** 1, 3, 13, 39 **10)** 1, 2, 3, 6, 7, 14, 21, 42 **11)** 1, 3, 5, 9, 15, 45 **12)** 1, 7, 49
Group B	Write the first 4 multiples of the following numbers: **1)** 10 **2)** 12 **3)** 15 **4)** 21 **5)** 22 **6)** 25 **7)** 34 **8)** 35 **9)** 36 **10)** 40 **11)** 45 **12)** 46	**1)** 10, 20, 30, 40 **2)** 12, 24, 36, 48 **3)** 15, 30, 45, 60 **4)** 21, 42, 63, 84 **5)** 22, 44, 66, 88 **6)** 25, 50, 75, 100 **7)** 34, 68, 102, 136 **8)** 35, 70, 105, 140 **9)** 36, 72, 108, 144 **10)** 40, 80, 120, 160 **11)** 45, 90, 135, 180 **12)** 46, 92, 138, 184

Factors, Multiples and Primes - Answers

Group C	Write these numbers as a product of their prime factors: **1)** 12 **2)** 15 **3)** 18 **4)** 21 **5)** 24 **6)** 28 **7)** 34 **8)** 35 **9)** 36 **10)** 40 **11)** 45 **12)** 46	 **1)** $2^2 \times 3$ **2)** 3×5 **3)** 2×3^2 **4)** 3×7 **5)** $2^3 \times 3$ **6)** $2^2 \times 7$ **7)** 2×17 **8)** 5×7 **9)** $2^2 \times 3^2$ **10)** $2^3 \times 5$ **11)** $3^2 \times 5$ **12)** 2×23

Factors, Multiples and Primes - Answers

	Question	Answer
	Applied Questions	
1)	**a)** Find the highest common factor of 18 and 24. **b)** Find the lowest common multiple of 18 and 24 .	**a)** HCF = 6 **b)** LCM = 72
2)	The number 420 can be expressed in the form $2^a \times 3 \times 5 \times b$, where a and b are integers. **a)** Find a and b. **b)** Write 420×6 as a product of prime factors.	**a)** $420 = 2^2 \times 3 \times 5 \times 7$ $a = 2,\ b = 7$ **b)** $420 \times 6 = 2^3 \times 3^2 \times 5 \times 7$
3)	**a)** Find the highest common factor of 84 and 96. **b)** Find the lowest common multiple of 84 and 96	**a)** HCF = 12 **b)** LCM = 672
4)	a and b are positive integers where $a < b$ The highest common factor of a and b is 7. The lowest common multiple of a and b is 42. **a)** Find the values of a and b. The highest common factor of a and b is 6. The lowest common multiple of a and b is 48. **b)** Find the values of a and b.	**a)** $a = 14,\ b = 21$ **b)** $a = 6,\ b = 48$
5)	**a)** Find the highest common factor of 20, 28 and 36. **b)** Find the lowest common multiple of 20, 28 and 36.	**a)** HCF = 4 **b)** LCM = 1260

Factors, Multiples and Primes - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Write down a multiple of 11 between 50 and 100.	**(a)** One from: 55, 66, 77, 88, 99	**(1)**
(b)	Write down two factors of 105 that are prime numbers.	**(b)** Any one of 3, 5, 7 Both correct	**(1)** **(1)**
2)	Find the lowest common multiple of 16 and 20.	**(a)** 16, 32, 48, 64, 80, ... **and** 20, 40, 60, 80, ... **or** $16 = 2^4$, $20 = 2^2 \times 5$ **oe** LCM = 80	 **(1)** **(1)**
3)	Patrick is making hot dogs for a party. Bread rolls are sold in packs of 6 and hot dog sausages are sold in packs of 8. Patrick wants to buy enough to make between 110 and 130 hot dogs with no leftovers. How many of each item should he buy?	$6 = 2 \times 3$ **or** $8 = 2 \times 2 \times 2$ LCM = 24 Multiples of 24: 24, 48, 72, 96, 120, ... 120 hot dogs $120 \div 6 = 20$ **or** $120 \div 8 = 15$ 20 packs of bread and 15 pack of sausages	**(1)** **(1)** **(1)** **(1)** **(1)**
4)	Find the highest common factor of $30x^2y$ and $45x^2y^3$.	**(a)** 15 **or** x^2y $15x^2y$	**(1)** **(1)**