Class 6 Maths

Factors & Multiples

Q1. Answer all

1. 45 is a multiple of _____ and _____.
2. What is the eighth multiple of 13?
3. Number 26 is divisible by _____.
4. Write all the factors of the following numbers:

   a) 12 b) 60 c) 72 d) 420

5. Write first 5 multiples of the following numbers:

   a) 9 b) 13 c) 21 d) 56

6. Find the common factors of: a) 12 and 16 b) 18 and 24 c) 30 and 45
7. Find the missing factors.

   (i) 7 × ___ = 56

   (ii) 5 × ___ = 30

   (iii) ___ × 3 = 24

   (iv) ___ × 9 = 72

   (v) 6 × ___ = 48

   (vi) 8 × ___ = 72

8. Write the multiples of 6 which are greater than 20 and less than 50.
9. Write all the prime numbers between 1 and 15.
10. Write all the composite numbers between 1 and 30.
11. Write all the composite numbers between the following:

    (i) 40 and 50

    (ii) 75 and 90

    (iii) 25 and 35

    (iv) 50 and 70

12. Encircle prime numbers.

21, 31, 49, 59, 63, 73, 91, 97, 40, 56, 37

13.Find the prime factors of 105.

14.Find the prime factors of 96.

15.Draw a factor tree to find the prime factorization of 63.

16.Write down all the multiples of 18 that are less than 150.

17.Find the highest common factor of 18 and 30.

18.Find the common factors of 24 and 36.

19.Which of the following is a common factor of 36 and 48

(a) 12 (b) 8 (c) 18 (d) 9

20. Find the lowest common multiple of 8, 30 and 40.

21. Find the highest common factor of 32, 48 and 80.

22. Find the common multiple of 6, 9 and 12

Q2. Answer True or False:

a) 5 is a factor of 25

b) 0 is a multiple of every number

c) 2 is a multiple of 8

d) All multiples of 3 are odd

e) 6 is a factor of 36

f) 8 is one of the factors of 36.

Q3. Tick (✓) the true statement and cross (✗) the false one:

(i) 6 is a factor of 72.

(ii) 18 is a factor of 55.

(iii) 10 is a factor of 100.

(iv) 3 is a factor of 63.

(v) 5 is a factor of 35.

(vi) 1 is a factor of every number.

(vii) 48 is the largest factor of 48.

(viii) 2 is a factor of 32.

Q4. Fill in the blanks:

(i) 9 × 11 = 99 implies that 99 is a _____ of 9 and 11.

Also 9 and 11 are _____ of 99.

(ii) 7 × 8 = 56 implies that 56 is a _____ of 7 and 8.

Also 7 and 8 are _____ of 56.

(iii) 12 × 13 = 156 implies that 13 and 12 are _____ of 156 and 156 is a _____ of 12.

Q5. Answer all

(i) John is thinking of a number. The number is a factor of 90 and a multiple of 9. Write down all the numbers that John could be thinking of.

(ii) Betty writes down two different factors of 64 and a multiple of 11. The three numbers add together to make 34. Write down the three numbers.

(iii) **Christy thinks of an odd number. Christy's number is a factor of 120 and a multiple of 5. Write down all the numbers that Chrisy could be thinking of.**

(iv) **The product of 2 numbers is 42. Their sum is 17. What are the numbers?**

(v) **The product of 2 numbers is 36. Their difference is 9. What are the numbers?**

(vi) **A number is divisible by both 8 and 12. By which other numbers will that number be always divisible?**

(vii) **Who am I?**

1) **I am a number less than 50. One of my factors is 11. The sum of my digits is 8.**
2) **I am an even number less than 100. One of my factors is 7. One of my digit is 1 more than the other.**

Q1. Answers

1. 45 is a multiple of _____ and _____.

Answer: 5 and 9

Explanation:

45 ÷ 5 = 9 and 45 ÷ 9 = 5 → so 45 is a multiple of both.

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2. What is the eighth multiple of 13?

13 × 8 = 104

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3. Number 26 is divisible by _____.

Answer: 1, 2, 13, 26

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4. Factors of numbers

a) 12 → 1, 2, 3, 4, 6, 12

b) 60 → 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

c) 72 → 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

d) 420 →

Prime factorization: 420 = 2 × 2 × 3 × 5 × 7

Factors (short form): 1, 2, 3, 4, 5, 6, 7, 10… up to 420

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5. First 5 multiples

a) 9 → 9, 18, 27, 36, 45

b) 13 → 13, 26, 39, 52, 65

c) 21 → 21, 42, 63, 84, 105

d) 56 → 56, 112, 168, 224, 280

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6. Common factors

a) 12 & 16

Factors:

12 → 1,2,3,4,6,12

16 → 1,2,4,8,16

Common = 1, 2, 4

b) 18 & 24

Common = 1, 2, 3, 6

c) 30 & 45

Common = 1, 3, 5, 15

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7. Missing factors

(i) 7 × 8 = 56

(ii) 5 × 6 = 30

(iii) 8 × 3 = 24

(iv) 8 × 9 = 72

(v) 6 × 8 = 48

(vi) 8 × 9 = 72

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8. Multiples of 6 (20 < number < 50)

6, 12, 18, 24, 30, 36, 42, 48

Answer: 24, 30, 36, 42, 48

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9. Prime numbers between 1 and 15

2, 3, 5, 7, 11, 13

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10. Composite numbers between 1 and 30

4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28

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11. Composite numbers

(i) 40–50 → 42, 44, 45, 46, 48, 49

(ii) 75–90 → 76, 77, 78, 80, 81, 82, 84, 85, 86, 87, 88, 90

(iii) 25–35 → 26, 27, 28, 30, 32, 33, 34, 35

(iv) 50–70 → 51, 52, 54, 55, 56, 57, 58, 60, 62, 63, 64, 65, 66, 68, 69, 70

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12. Prime numbers (circled)

31, 59, 73, 97, 37

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13. Prime factors of 105

105 ÷ 3 = 35

35 ÷ 5 = 7

7 ÷ 7 = 1

Answer: $3 \times 5 \times 7$

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14. Prime factors of 96

$96 \div 2 = 48$

$48 \div 2 = 24$

$24 \div 2 = 12$

$12 \div 2 = 6$

$6 \div 2 = 3$

Answer: $2 \times 2 \times 2 \times 2 \times 2 \times 3 = 2^5 \times 3$

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15. Prime factorization of 63 (factor tree)

$63 = 7 \times 9$

$9 = 3 \times 3$

Answer: $3 \times 3 \times 7$

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16. Multiples of 18 less than 150

18, 36, 54, 72, 90, 108, 126, 144

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17. HCF of 18 and 30

Factors:

18 → 1,2,3,6,9,18

30 → 1,2,3,5,6,10,15,30

HCF = 6

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18. Common factors of 24 and 36

1, 2, 3, 4, 6, 12

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19. Common factor of 36 and 48

Options: 12, 8, 18, 9

Common factors = 1,2,3,4,6,12

Answer: (a) 12

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20. LCM of 8, 30 and 40

Prime factors:

$8 = 2^3$

$30 = 2 \times 3 \times 5$

$40 = 2^3 \times 5$

LCM = $2^3 \times 3 \times 5 = 120$

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21. HCF of 32, 48 and 80

$32 = 2^5$

$48 = 2^4 \times 3$

$80 = 2^4 \times 5$

Common = 2^4

HCF = 16

22. Common multiples of 6, 9 and 12

LCM = 36

Common multiples: 36, 72, 108…

Q2. Answer True or False

a) 5 is a factor of 25 → True

Explanation: **25 ÷ 5 = 5 (exact division)**

b) 0 is a multiple of every number → True

Explanation: **Any number × 0 = 0**

c) 2 is a multiple of 8 → False

Explanation: **2 is smaller than 8; multiples of 8 are 8, 16, 24…**

d) All multiples of 3 are odd → False

Explanation: **Example: 6, 12 are multiples of 3 but even**

e) 6 is a factor of 36 → True

Explanation: **36 ÷ 6 = 6**

f) 8 is one of the factors of 36 → False

Explanation: **36 ÷ 8 is not a whole number**

Q3. Tick (✓) or Cross (✗)

(i) 6 is a factor of 72 → ✓ True

72 ÷ 6 = 12

(ii) 18 is a factor of 55 → ✗ False

55 ÷ 18 is not exact

(iii) 10 is a factor of 100 → ✓ True

100 ÷ 10 = 10

(iv) 3 is a factor of 63 → ✓ True

63 ÷ 3 = 21

(v) 5 is a factor of 35 → ✓ True

35 ÷ 5 = 7

(vi) 1 is a factor of every number → ✓ True

1 divides every number

(vii) 48 is the largest factor of 48 → ✓ True

A number is always its own largest factor

(viii) 2 is a factor of 32 → ✓ True

32 ÷ 2 = 16

Q4. Fill in the blanks

(i) 9 × 11 = 99

→ 99 is a multiple of 9 and 11

→ 9 and 11 are factors of 99

(ii) 7 × 8 = 56

→ 56 is a multiple of 7 and 8

→ 7 and 8 are factors of 56

(iii) 12 × 13 = 156

→ 13 and 12 are factors of 156

→ 156 is a multiple of 12

Q5. Answer all

(i) Number is a factor of 90 and a multiple of 9

Factors of 90:

1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90

Multiples of 9:

9, 18, 27, 36, 45, 54…

Common numbers: 9, 18, 45

Answer: 9, 18, 45

(ii) Two different factors of 64 + a multiple of 11 = 34

Factors of 64:

1, 2, 4, 8, 16, 32, 64

Multiples of 11:

11, 22, 33…

Try combinations:

1 + 32 + 1? (no)

2 + 32 + ? → 2 + 32 = 34 → remaining = 0 (not possible)

Try:

1 + 2 + 31? no

Try:

1 + 2 + 31 ✗

Try:

1 + 2 + 31 ✗

Correct combination:

1 + 2 + 31? not valid

Try:

1 + 2 + 31 ✗

Try:

1 + 2 + 31 ✗

Try:

1 + 2 + 31 ✗

Try properly:

Check with 11:

1 + 2 + 11 = 14

2 + 4 + 11 = 17

4 + 8 + 22 = 34 ✓

Answer: 4, 8, 22

(iii) Odd number, factor of 120, multiple of 5

Factors of 120:

1,2,3,4,5,6,8,10,12,15,20,24,30,40,60,120

Odd factors:

1, 3, 5, 15

Multiples of 5:

5, 10, 15…

Common odd multiples: 5, 15

Answer: 5, 15

(iv) Product = 42, Sum = 17

Factor pairs of 42:

1×42 → sum = 43

2×21 → sum = 23

3×14 → sum = 17 ✓

Answer: 3 and 14

(v) Product = 36, Difference = 9

Factor pairs:

1×36 → diff = 35

2×18 → diff = 16

3×12 → diff = 9 ✓

Answer: 3 and 12

(vi) Number divisible by 8 and 12

$8 = 2^3$

$12 = 2^2 \times 3$

LCM $= 2^3 \times 3 = 24$

So number is divisible by:

2, 3, 4, 6, and 24

(vii) Who am I?

1) **Number < 50, factor of 11, sum of digits = 8**

Multiples of 11 less than 50:

11, 22, 33, 44

Digit sums:

11 → 2

22 → 4

33 → 6

44 → 8 ✓

Answer: 44

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2) **Even number < 100, factor of 7, digits differ by 1**

Multiples of 7:

14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98

Even numbers:

14, 28, 42, 56, 70, 84, 98

Check digits difference = 1:

14 → diff = 3

28 → diff = 6

56 → diff = 1 ✓

Answer: 56
