

Chapter - 1

$$13 \times 2 = 26$$

13 and 2 are the factors of 26

. Multiples and Factors

. Prime factorisation

. HCF, LCM

. Rounding

$$5 \times 4 = 20$$

$$7 \times 7 = 49$$

$$2 \mid 40$$

$$2 \mid 20$$

$$2 \mid 10$$

$$5 \mid 5$$

$$1$$



Multiples

Question 1: Write down the first six multiples of these numbers

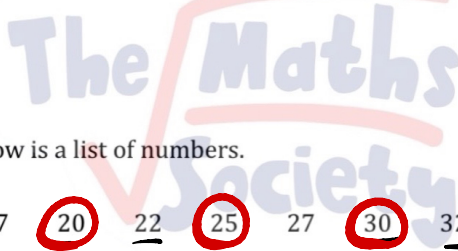
(a) 5, **10, 15, 20, 25, 30**

(b) 3, **6, 9, 12, 15, 18**

(c) 4, **8, 12, 16, 20, 24**

(d) 10, **20, 30, 40, 50, 60**

(e) 7, **14, 21, 28, 35, 42**



Question 2: Below is a list of numbers.

12 **15** 17 **20** 22 **25** 27 **30** 32 **35** 39 **40**

From the list write down any numbers that are multiples of:

(a) 2

12, 20, 22, 30, 32, 40

(b) 5

15, 20, 25, 30, 35, 40

(c) 10

20, 30, 40

(d) 3

12, 15, 27, 30, 39

(e) 4

12, 20, 32, 40

Question 3: List all the numbers between 40 and 60 (inclusive) that are multiples of:

(a) 5

40, 45, 50, 55, 60

(b) 3

42, 45, 48, 51, 54, 57, 60

(c) 6

42, 48, 54, 60

(d) 8

48, 56

(e) 9

45, 54

Question 4: Below is a list of numbers.

100 101 102 103 104 105 106 107 108 109

From the list write down any numbers that are multiples of:

(a) 2

100, 102, 104, 106, 108

(b) 3

102, 105, 108

(c) 5

100, 105

(d) 10

100

(e) 4

100, 104, 108

Question 5: (a) List the first ten multiples of 3.

3, 6, 9, 12, 15, 18, 21, 24, 27, 30

(b) List the first ten multiples of 4.

4, 8, 12, 16, 20, 24, 28, 32, 36, 40

(c) Write down any numbers listed that are multiples of both 3 and 4.

12, 24

Question 6: (a) List the first ten multiples of 5.

5, 10, 15, 20, 25, 30, 35, 40, 45, 50

(b) List the first ten multiples of 6.

6, 12, 18, 24, 30, 36, 42, 48, 54, 60

(c) Write down any numbers listed that are multiples of both 5 and 6.

30

Question 7: (a) List the first ten multiples of 6.

6, 12, 18, 24, 30, 36, 42, 48, 54, 60

(b) List the first ten multiples of 9.

9, 18, 27, 36, 45, 54, 63, 72, 81, 90

(c) Write down any numbers listed that are multiples of both 6 and 9.

18, 36, 54

Question 8: Write down three common multiples of 8 and 12.

24, 48, 72

**↳ 12, 24, 36, 48,
60, 72**

Question 9: Write down three common multiples of 4 and 6.

12, 24, 36

**↳ 12, 18, 24,
30, 36**

Question 10: Write down three common multiples of 15 and 20.

60, 120, 180

**↳ 40, 60,
80, 100,
120, 140,
160**

Factors

Question 1: List all the factors of these numbers

(a) 8

1, 2, 4, 8

(b) 10

1, 2, 5, 10

(c) 7

1, 7

(d) 12

1, 2, 3, 4, 6, 12

(e) 20

1, 2, 4, 5, 10, 20

Question 2: Is 3 a factor of... ?

(a) 14

~~()~~ 21

~~()~~ 27

(d) 32

~~()~~ 57

Question 3: Is 5 a factor of... ?

~~()~~ 20

(b) 34

~~()~~ 40

(d) 38

~~()~~ 45

Question 4: 21 **25** 30 45

Which number is the odd one out? why?

not ÷ by 3

Question 5: 15 24 **28** 33

Which number is the odd one out? why?

not ÷ by 3

Question 6: Mary has 26 sweets and is able to share them evenly between her friends.

Mary has more than 1 friend.

Write down how many friends Mary might have.

26 = 1 × 26 | **2 or 13 friends**
= 2 × 13

Question 7: James says that all numbers have an even number of factors.

Is he correct?

No, 26 has 13 as a factor.

Prime Factorisation

Question 1: Write each of these numbers as the product of their prime factors.

(a) $10 = 2 \times 5$

(b) $12 = 2^2 \times 3$

(c) $20 = 2^2 \times 5$

(d) $18 = 2 \times 3^2$

(e) $16 = 2^4$

Question 2: Write each of these numbers as the product of their prime factors.
Give your answers in index form.

(a) $36 = 2^2 \times 3^2$

(b) $40 = 4 \times 10 = 2^3 \times 5$

(c) $28 = 2^2 \times 7$

(d) $48 = 3 \times 16 = 2^4 \times 3$

(e) $80 = 8 \times 10 = 2^3 \times 2 \times 5$
 $= 2^4 \times 5$

Question 3: Write each of these numbers as the product of their prime factors.

(a) $9000 = 9 \times 1000$
 $= 3^2 \times 10^3 = 3^2 \times (2 \times 5)^3 = 2^3 \times 3^2 \times 5^3$

(b) $235 = 5 \times 47$

(c) $392 = 2 \times 196 = 2^2 \times 49 = 2^3 \times 7^2$
 $= 2^3 \times 7^2$

$$(d) 715 = 5 \times 143 \\ = 5 \times 11 \times 13$$

$$(e) 444 = 2^2 \times 111 \\ = 2^2 \times 3^1 \times 37$$

Question 4: Using the fact that $12 = 2^2 \times 3$, write each of the following as the product of prime factors in index form.

$$(a) 24 = 2^3 \times 3^1$$

$$(b) 36 = 2^2 \times 3^2$$

$$(c) 60 = 2^2 \times 3 \times 5$$

$$(d) 48 = 2^4 \times 3$$

$$(e) 120 = 2^3 \times 3 \times 5$$

Question 5: Using the fact that $300 = 2^2 \times 3 \times 5^2$, write each of the following as the product of prime factors in index form.

$$(a) 600 = 2^3 \times 3 \times 5^2$$

$$(b) 150 = 2 \times 3 \times 5^2$$

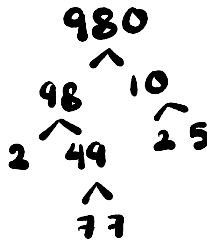
$$(c) 900 = 2^2 \times 3^2 \times 5^2$$

$$(d) 3300 = 2^2 \times 3 \times 5^2 \times 11$$

$$(e) 1500 = 2^2 \times 3 \times 5^3$$

- Question 6: (a) Write 980 as a product of prime factors.
Express your answer in index form.

$$2^2 \times 5^1 \times 7^2$$

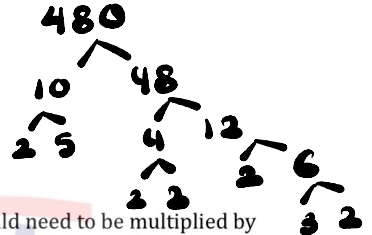


- (b) Find the lowest number by which 980 would need to be multiplied by to give a square number.

$$5$$

- Question 7: (a) Write 480 as a product of prime factors.
Express your answer in index form.

$$2^5 \times 3 \times 5^1$$

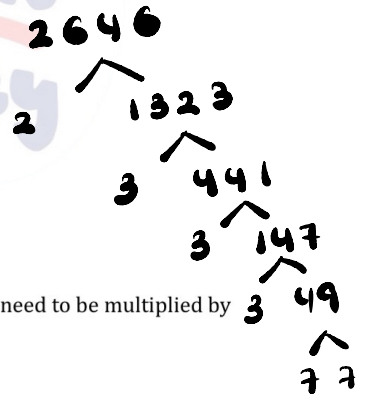


- (b) Find the lowest number by which 480 would need to be multiplied by to give a square number.

$$2 \times 3 \times 5 = 30$$

- Question 8: (a) Write 2646 as a product of prime factors.
Express your answer in index form.

$$2 \times 3^3 \times 7^2$$



- (b) Find the lowest number by which 2646 would need to be multiplied by to give a cube number.

$$2^2 \times 7^1 = 28$$

Multiples, Factors and Prime Factorisation

1. Write down the first **five** multiples of 3.

3, 6, 9, 12, 15

2. From the list of numbers

7 9 12 21 23 30 36 45

- (a) write down the multiples of 7.

7, 21

- (b) write down the multiples of 5.

30, 45

- (c) write down the multiples of 12.

12, 36

3. (a) Write down two multiples of 4.

4, 8

- (b) Write down two multiples of 9.

9, 18

- (c) Write down a number which is a multiple of both 4 and 9.

36, 72

18, 27, 36, 45, 54,

63, 72

4. Write down all the factors of 16.

1, 2, 4, 8, 16

5. Write down all the factors of 26.

1, 2, 13, 26

6. From the list of numbers

3 5 7 9 11 15 24

- (a) Write down a factor of 12

3

- (b) Write down a factor of 28

7

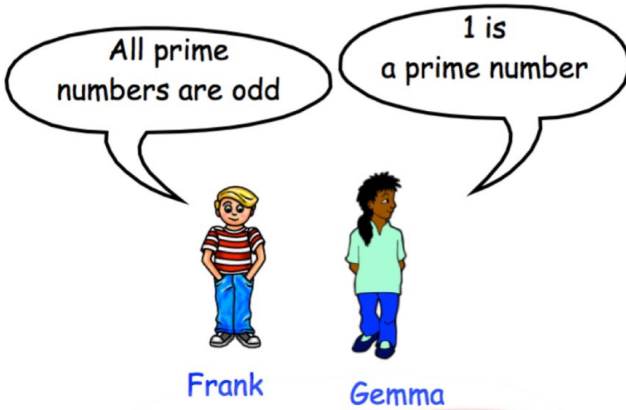
- (c) Write down a factor of 81

9

7. Write down all the prime numbers between 10 and 20.

11, 13, 17, 19

8.



Give a reason why each child is wrong.

Frank: **2 is a prime number.**

Gemma: **2 is a smallest prime number**

9. Here is a list of numbers

6 10 11 16 24 30 40

(a) Write down a multiple of 20

40

(b) Write down a factor of 12

6

(c) Write down a prime number

11

10. Here is a list of 8 numbers.

15 16 17 18 20 22 24 29

(a) Write down a prime number

17, 29

(b) Write down a factor of 30

15

(c) Write down a multiple of 3, which is even.

18, 24

11.



From the numbers in the rectangle,

(a) Write down a factor of 35.

7

(b) Write down the number which is **not prime**

9

12. A bus to Belfast leaves Antrim Bus Station every 25 minutes.

The first bus each day leaves at 7am.

Darren wants to get a bus after 8am.

What time is the first suitable bus?

7 - 7:25 - 7:50 - 8:15

8:15 am

13. A blue light flashes every 8 seconds.
A red light flashes every 12 seconds.

$$8 = 2^3$$

$$12 = 2^2 \times 3$$

Both lights have just flashed together.

After how many seconds will both lights flash together?

24 seconds

14. Kelly is organising a barbecue.
She needs bread rolls and burgers.

Bread rolls are sold in packs of 20.

Burgers are sold in packs of 12.

Kelly buys exactly the same number of bread rolls as burgers.

What is the least number of each pack that Kelly buys?

- 15.

.....³..... packs of bread rolls

.....⁵..... packs of burgers

All even numbers
greater than two, can be written
as the sum of two prime numbers



Peter

Give **three** examples that show that Peter is correct.

$$3 + 5 = 8$$

$$7 + 3 = 10$$

$$7 + 5 = 12$$

HCF

Question 1: Find the highest common factor (HCF) of each of these sets of numbers.

(a) 6 and 8 $6 = 2 \times 3$

$$8 = 2^3$$

$$\text{H.C.F} = 2$$

(b) 15 and 20 $15 = 3 \times 5$

$$20 = 2^2 \times 5$$

$$\text{H.C.F} = 5$$

(c) 9 and 15 $9 = 3^2$

$$15 = 3 \times 5$$

$$\text{H.C.F} = 3$$

(d) 7 and 14

$$\text{H.C.F} = 7$$

(e) 30 and 40

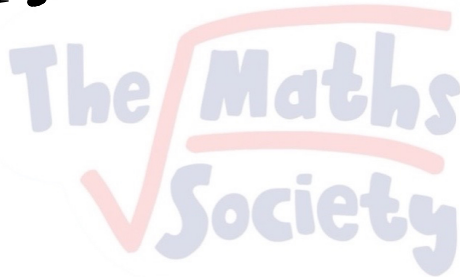
$$\text{H.C.F} = 10$$

(f) 21 and 27

$$\text{H.C.F} = 3$$

(g) 18 and 30 $18 = 3^2 \times 2$

$$\text{H.C.F} = 6 \quad 30 = 3 \times 2 \times 5$$



(h) 16 and 24

$$16 = 2^4$$
$$24 = 2^3 \times 3$$

$$\text{H.C.F} = 8$$

Question 2: Find the highest common factor (HCF) of each of these sets of numbers.

(a) 12, 6 and 15

$$12 = 2^2 \times 3$$
$$6 = 2 \times 3$$
$$15 = 3 \times 5$$

$$\text{H.C.F} = 3$$

(b) 27, 33 and 12

$$27 = 3^3$$
$$33 = 3 \times 11$$
$$12 = 2^2 \times 3$$

$$\text{H.C.F} = 3$$

(c) 30, 15 and 25

$$30 = 2 \times 3 \times 5$$
$$15 = 3 \times 5$$
$$25 = 5 \times 5$$

$$\text{H.C.F} = 5$$

(d) 8, 20 and 12

$$8 = 2^3$$
$$20 = 2^2 \times 5$$
$$12 = 2^2 \times 3$$

$$\text{H.C.F} = 4$$

(e) 10, 25 and 13

$$\text{H.C.F} = 1$$

LCM

Question 1: Find the lowest common multiple (LCM) of each of these sets of numbers.

(a) 2 and 5

$$\text{L.C.M.} = 10$$

(b) 3 and 4

$$\text{L.C.M.} = 12$$

$$2^2 \quad 3 \times 2$$

(c) 4 and 6

$$\text{L.C.M.} = 12$$

(d) 10 and 15

$$5 \times 2 \quad 5 \times 3$$

$$\begin{aligned} \text{L.C.M.} &= 5 \times 2 \times 3 \\ &= 30 \end{aligned}$$

(e) 20 and 30

$$2^2 \times 5 \quad 3 \times 2 \times 5$$

$$\begin{aligned} \text{L.C.M.} &= 2^2 \times 3 \times 5 \\ &= 60 \end{aligned}$$

(f) 3 and 5

$$\text{L.C.M.} = 15$$

$$3 \times 2 \quad 3 \times 3$$

(g) 6 and 9

$$\begin{aligned} \text{L.C.M.} &= 3 \times 3 \times 2 \\ &= 18 \end{aligned}$$

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(h) 6 and 12

$$\begin{array}{l} 3 \times 2 \quad 2^2 \times 3 \\ \text{L.C.M} = 3 \times 2^2 \\ = 12 \end{array}$$

Question 2: Find the lowest common multiple (LCM) of each of these sets of numbers.

(a) 2, 3 and 5

$$\begin{array}{l} \text{L.C.M} = 2 \times 3 \times 5 \\ = 30 \end{array}$$

(b) 3, 4 and 5

$$\begin{array}{l} \text{L.C.M} = 3 \times 2 \times 2 \times 5 \\ = 60 \end{array}$$

(c) 2, 5 and 7

$$\begin{array}{l} \text{L.C.M} = 2 \times 5 \times 7 \\ = 70 \end{array}$$

(d) 5, 6 and 9

$$\begin{array}{l} \text{L.C.M} = 5 \times 2 \times 3 \times 3 \\ = 90 \end{array}$$

(e) 10, 12 and 15

$$\begin{array}{l} 5 \times 2 \quad 3 \times 5 \\ 2^2 \times 3 \\ \text{L.C.M} = 2^2 \times 3 \times 5 \\ = 60 \end{array}$$

Rounding

Question 1: 645 people attended a concert. Round this to the nearest 10.

650

Question 2: 861 students attend a school. Round this to the nearest 100.

900

Question 3: The cost of a laptop is £1348. Round this to the nearest £100.

£ 1300

Question 4: 24,812 people attended a football match. Round this to the nearest thousand.

25000

Question 5: The population of a city is 85,398. Round this to the nearest thousand.

85000

Question 6: The population of a village is 900 to the nearest 100.

State if the following could be true or false:

(a) 890 people live in the village.

T

(b) 960 people live in the village.

F

(c) 912 people live in the village.

T

(d) 845 people live in the village.

F

(e) 850 people live in the village.

T

(f) 950 people live in the village.

F

1. Round 74 to the nearest ten.

Circle your answer.

10

60

70

80

2. Round 852 to the nearest hundred.

Circle your answer.

800

850

860

900

3. Round 1483 to the nearest hundred.

Circle your answer.

1000

1400

1500

2000

4. Round 3.6 to the nearest whole number.

4

5. Round 5277 to the nearest thousand.

5000

6. (a) Round 3925 to the nearest thousand.

4000

- (b) Round 3925 to the nearest hundred.

3900

- (c) Round 3925 to the nearest ten.

3930

- (d) Round 17.89 to the nearest whole number.

18

7. Round 833 to the nearest ten.

830

8. A car weighs 2835kg

Round this to the nearest hundred kilograms.

2800

9. (a) Write the number 14351 in words.

fourteen thousands, three hundreds and fifty-one.

- (b) Write the number 14351 to the nearest hundred.

14400

10. (a) Write the number 1906 in words.

One thousand, nine hundreds and six.

- (b) Write the number **twenty thousand, three hundred and twenty nine** in figures.

20329

- (c) Write the number 1906 to the nearest ten.

1910

- (d) Write the number 38 627 to the nearest thousand.

39000

11. Write the number 3627 correct to the nearest hundred.

3600

12. Write the number 38495 correct to the nearest 1000.

38000

13. A plane ticket costs £247. Round this amount to the nearest £10.

250

14. There are 2600 jelly beans in a jar to the nearest hundred.

Jack says that there could be 2538 jelly beans in the jar.

Mia says that there could be 2640 jelly beans in the jar.

Frank says that there could be 2651 jelly beans in the jar. Which of three people is correct?

15. Round 4.63 to 1 decimal place.

4.6

16. Round 9.18 to 1 decimal place.

9.2

17. (a) Round the number 7.819 to one decimal place.

7.8

- (b) Round the number 7.819 to two decimal places.

7.82

18. Write 25.733 correct to the nearest whole number.

26

19. 123604 people attend a museum in November.

Round 123604 to the nearest thousand people.

124000

20. (a) Write 4486 to the nearest thousand. **4000**
 (b) Round 2156 to the nearest hundred. **2200**
 (c) Round 47.47 to the nearest whole number. **47**

21.

$$135.66 + 193.88$$

$$329.54$$

Holly works out the answer to $135.66 + 193.88$ on a calculator.

Her answer is shown on the calculator.

- (a) Round her answer to the nearest 10. **330**
 (b) Round her answer to the nearest 100. **300**
 (c) Round her answer to the nearest integer. **330**
 (d) Round her answer to one decimal place. **329.5**
22. A litre of unleaded costs 171.9p. Write this amount to the nearest penny.
23. (a) Write 5725 to the nearest 100. **5700**
 (b) Write 83.07718 correct to two decimal places. **83.1**
 (c) Write 6.35 correct to 1 decimal place. **6.4**
 (d) Write 129.34952 correct to 1 decimal place. **129.3**
 (e) Write 65.047 correct to 2 decimal places. **65.05**
24. Round 9.3647 to 2 decimal places. **9.36**
25. Write 8.17362 correct to 3 decimal places. **8.174**