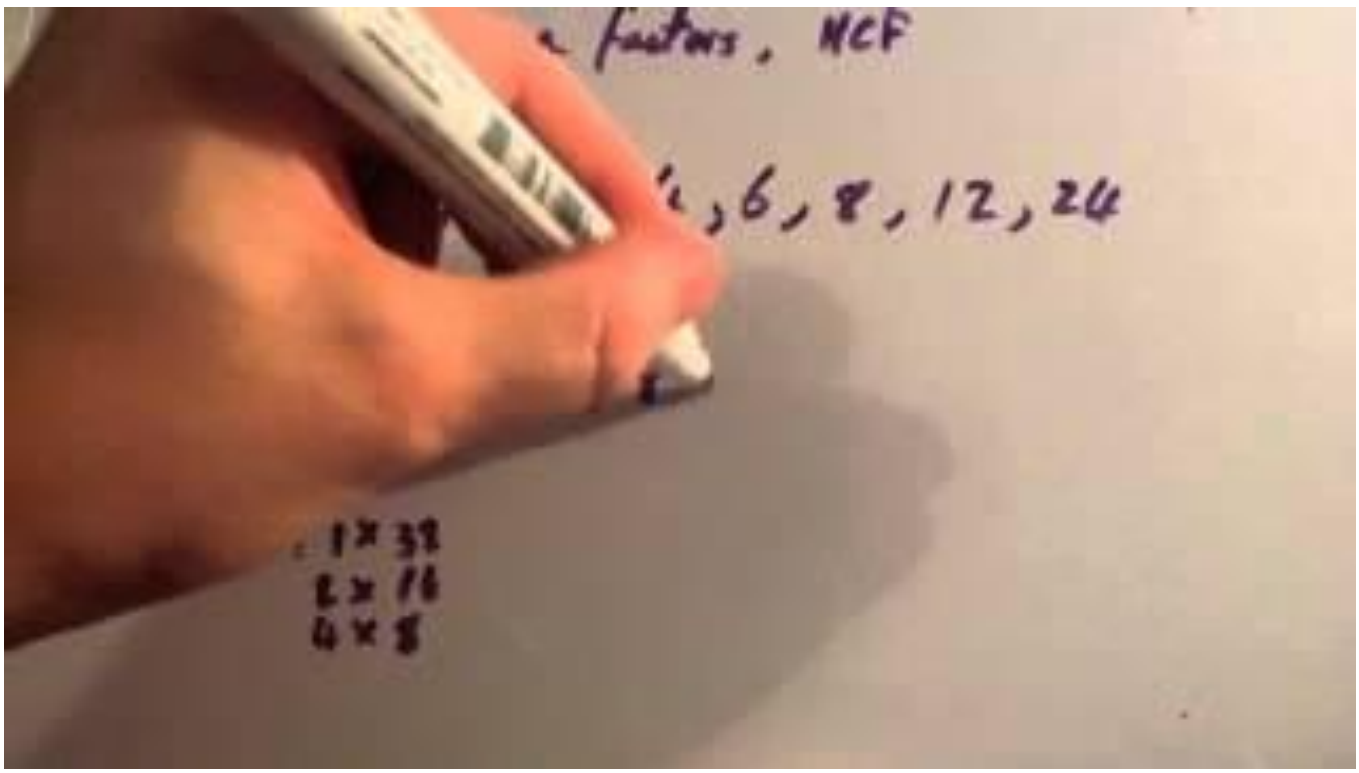
Second Lesson

1. Give yourself 5 minutes to complete the starter then martk your own work. Answers are on the last page

Qu 1 19 x 20 = ___	Qu 2 110 x 800 = ___	Qu 3 36 + 48 = ___	Qu 4 45 - 39 = ___
Qu 5 39 + 29 = ___	Qu 6 Simplify $^{38}/_{60}$	Qu 7 37 + 25 = ___	Qu 8 Simplify 48:54
Qu 9 Simplify $^{46}/_{72}$	Qu 10 43 - 35 = ___	Qu 11 11 x 24 = ___	Qu 12 43 - 26 = ___

2. Watch this video:



3. Complete the questions below (10 minutes)

Question 1: (a) List all the factors of 10
(b) List all the factors of 15
(c) Write down all the common factors of 10 and 15.

Question 2: (a) List all the factors of 12
(b) List all the factors of 18
(c) Write down all the common factors of 12 and 18.

Question 3: Write down all the common factors of each of these pairs of numbers.

(a) 6 and 8 (b) 15 and 20 (c) 9 and 15 (d) 7 and 14

(e) 30 and 40 (f) 21 and 27 (g) 18 and 30 (h) 16 and 24

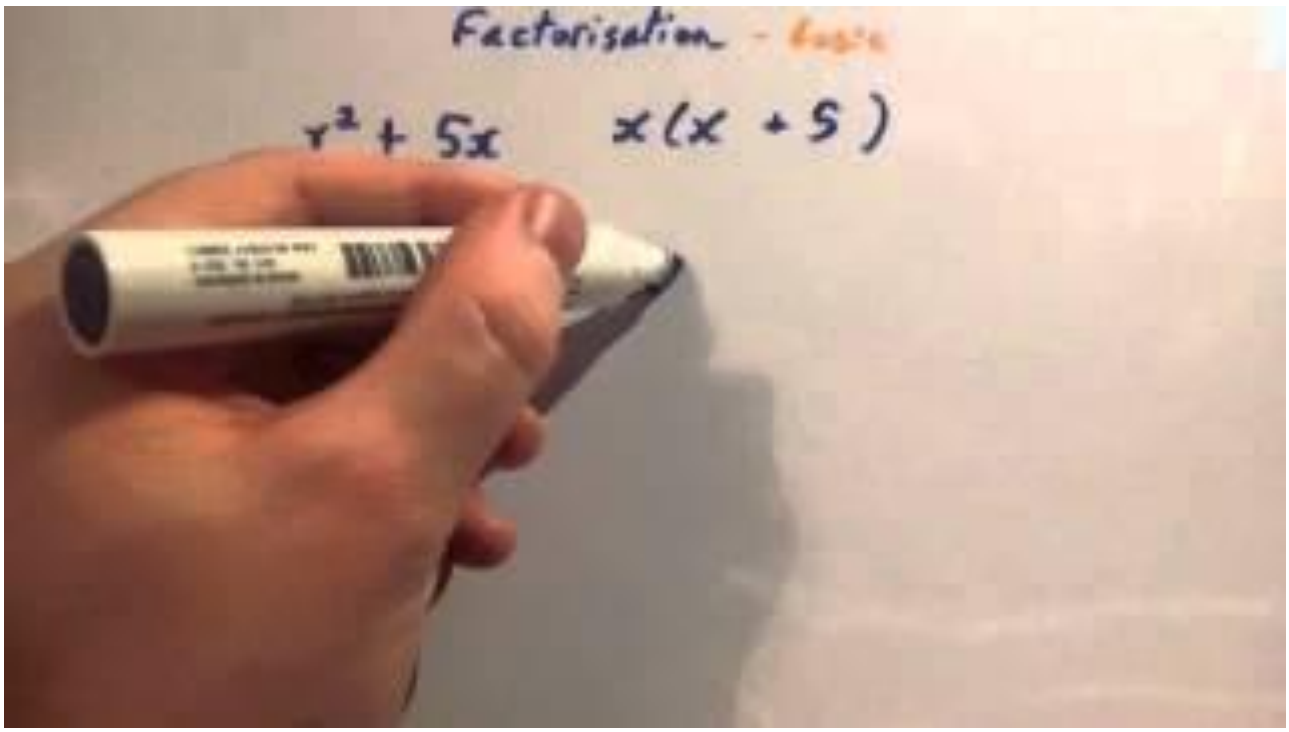
Question 4: (a) List all the factors of 14
(b) List all the factors of 21
(c) Find the highest common factor (HCF) of 14 and 21.

Question 5: (a) List all the factors of 24
(b) List all the factors of 36
(c) Find the highest common factor (HCF) of 24 and 36.

4. Complete at least 2 of these tasks (1, 2, 3 or 4) (5 minutes)

Find the mistakes in these two lists of factors: Factors of 12: 1, 2, 3, 4, 5, 6, 12 Factors of 30: 1, 2, 3, 4, 5, 6, 10, 15, 30 What is the **highest common factor** of 12 and 30? ①	List the factors of 16. List the factors of 24. Use your lists to find the **highest common factor** of 16 and 24. ②
Find the HCF of 28 and 42. ③	Find the HCF of 48, 60 & 36. ④

5. Watch this video



6. Complete the questions below (10 minutes)

Question 1: Factorise the following expressions

(a) $4x + 6$	(b) $15x + 20$	(c) $9y - 12$	(d) $5x + 15$
(e) $6x - 3$	(f) $4x + 8$	(g) $5y - 25$	(h) $8w + 24$
(i) $10y + 15$	(j) $14w + 21$	(k) $20y - 30$	(l) $27x + 18$
(m) $6 - 4x$	(n) $9 + 12y$	(o) $45 + 60x$	(p) $16y - 32$
(q) $22a + 55$	(r) $100 - 40y$	(s) $6x + 9y$	(t) $4w - 2a$
(u) $25y - 35z$	(v) $8x^2 + 20$	(w) $30y^3 - 15$	(x) $42y + 28x - 56c$

Question 2: Factorise the following expressions

(a) $x^2 + 7x$	(b) $x^2 - 3x$	(c) $y^2 + y$	(d) $w^2 + 9w$
(e) $x^2 - 7x$	(f) $4w^2 + 10w$	(g) $6x^2 - 8x$	(h) $9y^2 - 6y$
(i) $10c + c^2$	(j) $5g - g^2$	(k) $14x^2 + 35x$	(l) $40x^2 - 50x$
(m) $12x^2 + 18x$	(n) $24x^2 - 18x$	(o) $45y^2 + 60y$	(p) $7w^2 + 2w$

7. Complete at least 2 of these tasks (1, 2, 3 or 4) (5 minutes)

Complete the factorisation of these expressions:

$2x + 8 = 2(\quad\quad)$

$4x - 20 = \quad\quad(x - 5)$

$4x - 12 = \quad(\quad\quad)$

①

Factorise these expressions:

$8x + 12 =$

$7 - 28e =$

$10a - 15b + 10 =$

②

Factorise:

$6 + 18x - 18 =$

$30 - 24a + 48b + 6 =$

$32a - 40ab =$

③

Factorise:

$5a + 2(21ab) - 40a$

$36ab - 42abc$

$60a^2 - 48a$

④

8. Complete both questions (4 minutes)

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1 (a) Factorise $4 - 12n$

.....
(1)

(a) Factorise fully $3g^2h + 6gh^2$

.....
(2)

(Total for Question 1 is 3 marks)

2 (a) Factorise $6 - 24b$

.....
(1)

(a) Factorise fully $4km^2 - 12k^2m$

.....
(2)

(Total for Question 2 is 3 marks)

Answers

Qu 1	Qu 2	Qu 3	Qu 4
380	88000	84	6
Qu 5	**Qu 6**	**Qu 7**	**Qu 8**
68	$^{19}/_{30}$	62	8:9
Qu 9	**Qu 10**	**Qu 11**	**Qu 12**
$^{23}/_{36}$	8	264	17

Common Factors and the HCF

Workout

Question 1:

(a) 1, 2, 5, 10 (b) 1, 3, 5, 15 (c) 1, 5

Question 2:

(a) 1, 2, 3, 4, 6, 12 (b) 1, 2, 3, 6, 9, 18 (c) 1, 2, 3, 6

Question 3:

(a) 1, 2 (b) 1, 5 (c) 1, 3 (d) 1, 7

(e) 1, 2, 5, 10 (f) 1, 3 (g) 1, 2, 3, 6 (h) 1, 2, 4, 8

Question 4:

(a) 1, 2, 7, 14 (b) 1, 3, 7, 21 (c) 7

Question 5:

(a) 1, 2, 3, 4, 6, 8, 12, 24 (b) 1, 2, 3, 4, 6, 8, 12, 18, 36 (c) 12

Find the mistakes in these two lists of factors:

Factors of 12: 1, 2, 3, 4, 5, 6, 12

Factors of 30: 1, 2, 3, 4, 5, 6, 10, 15, 30

What is the **highest common factor** of 12 and 30?

6

①

List the factors of 16.

1, 2, 4, **8**, 16

List the factors of 24.

1, 2, 3, 4, 6, **8**, 12, 24

Use your lists to find the **highest common factor** of 16 and 24.

8

②

Find the HCF of 28 and 42.

14

28: 1, 2, 4, 7, **14**, 28

42: 1, 2, 3, 6, 7, **14**, 21, 42

③

Find the HCF of 48, 60 & 36.

12

48: 1, 2, 3, 4, 6, 8, **12**, 16, 24, 48

60: 1, 2, 3, 4, 5, 6, 10, **12**, 15, 20, 30, 60

36: 1, 2, 3, 4, 6, 9, **12**, 18, 36

④

Factorisation

Workout

Question 1

(a) $2(2x + 3)$ (b) $5(3x + 4)$ (c) $3(3y - 4)$ (d) $5(x + 3)$
(e) $3(2x - 1)$ (f) $4(x + 2)$ (g) $5(y - 5)$ (h) $8(w + 3)$
(i) $5(2y + 3)$ (j) $7(2w + 3)$ (k) $10(2y - 3)$ (l) $9(3x + 2)$
(m) $2(3 - 2x)$ (n) $3(3 + 4y)$ (o) $15(3 + 4x)$ (p) $16(y - 2)$
(q) $11(2a + 5)$ (r) $20(5 - 2y)$ (s) $3(2x + 3y)$ (t) $2(2w - a)$
(u) $5(5y - 7z)$ (v) $4(2x^2 + 5)$ (w) $15(2y^3 - 1)$
(x) $14(3y + 2x - 4c)$

Question 2

(a) $x(x + 7)$ (b) $x(x - 3)$ (c) $y(y + 1)$ (d) $w(w + 9)$
(e) $x(x - 7)$ (f) $2w(2w + 5)$ (g) $2x(3x - 4)$ (h) $3y(3y - 2)$
(i) $c(10 + c)$ (j) $g(5 - g)$ (k) $7x(2x + 5)$ (l) $10x(4x - 5)$
(m) $6x(2x + 3)$ (n) $6x(4x - 3)$ (o) $15y(3y + 4)$ (p) $w(7w + 2)$

Complete the factorisation of these expressions:

$2x + 8 = 2(\boxed{x + 4})$

$4x - 20 = \boxed{4}(x - 5)$

$4x - 12 = \boxed{4(x - 3)}$

①

Factorise these expressions:

$8x + 12 = \boxed{4(2x + 3)}$

$7 - 28e = \boxed{7(1 - 4e)}$

$10a - 15b + 10 = \boxed{5(2a - 3b + 2)}$

②

Factorise:

$6 + 18x - 18 = \boxed{6(3x - 2)}$

$30 - 24a + 48b + 6 = \boxed{12(3 - 2a + 4b)}$

$32a - 40ab = \boxed{8a(4 - 5b)}$

③

Factorise:

$5a + 2(21ab) - 40a$ $\boxed{7a(6b - 5)}$

$36ab - 42abc$ $\boxed{6ab(6 - 7c)}$

$60a^2 - 48a$ $\boxed{12a(5a - 4)}$

④

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1 (a) Factorise $4 - 12n$ ÷ 4

4(1 - 3n)

(1)

(a) Factorise fully $3g^2h + 6gh^2$

÷ 3, ÷ g, ÷ h

3gh(g + 2h)

(2)

(Total for Question 1 is 3 marks)

2 (a) Factorise $6 - 24b$ ÷ 6

6(1 – 4b)

(1)

(a) Factorise fully $4km^2 - 12k^2m$

÷ 4, ÷ k, ÷ m

4km(m + 3k)

(2)

(Total for Question 2 is 3 marks)