Year 7

Test 1 - Factors and Algebraic Expressions

Resources Allowed

Baldivis Secondary College

Name: Answers Class: _____ Time: 40 minutes Total Mark:____/43

Show working and answers on this sheet. Show working in sufficient detail to support your answers. Incorrect answers without supporting reasoning may be allocated zero marks.

Calculator Allowed

Question 1	**3 marks**

Match the definition on the right-hand side with the correct word on the left-hand side by drawing a line between each one:

Has only two factors: 1 and itself	Factor Tree
Has more than two factors	Composite Number
A diagram that lists the prime factors of a number.	Prime Number

Question 2	**5 marks**

a) Write down two integers that multiply to give 35

1 x 35 or 5 x 7. ✓

b) Write down all the factors of 35 and 21

35 – 1, 5, 7, 35 ✓ (-½ mark each one missed).

21 - 1, 3, 7, 21 ✓

c) Write down the all the common factors of 21 and 35.

1, 7 ✓

d) Find the <u>highest common factor</u> (HCF) for 21 and 35.

7 ✓

Question 3 **3 marks**

Find the HCF of 12 and 60

12 - 1, 2, 3, 4, 6, 12.

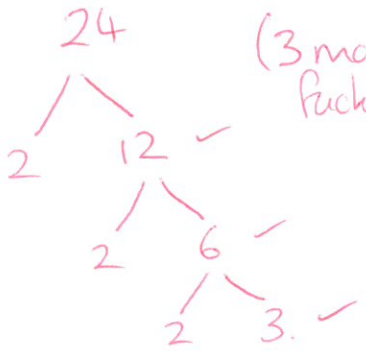
60 - 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60.

(1) attempting to find the factors for each. (1)

HCF = 12 ✓(1) - give full marks if answer 12 only written down.

Question 4 **5 marks**

Draw a factor tree for the number 24 and write 24 as a product of prime factors:



(3 marks for factor tree).

$24 = 2 \times 2 \times 2 \times 3$ ✓(1)

$= 2^3 \times 3$ ✓(1)

Question 6 **5 marks**

Pascal's Triangle involves each row of the triangle being created using the numbers in the row above it, the first six rows are shown below:

a) Complete the next 2 rows of Pascal's triangle.
b) Describe how the pattern works.

✓ correct reason.

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 45 45 21 7 1

✓✓ (-½ omitted or error)

Question 7 **3 marks**

Match up the law with the example written in symbols

Associative Law	$a \times (b + c) = a \times b + a \times c$
Commutative Law	$a + b + c = (a + b) + c = a + (b + c)$
Distributive Law	$a + b = b + a$

Question 8 **3 marks**

Label the following diagram using these key words (co-efficient, terms, constant term):

terms or

$5x + 2p - 6$ — constant term

or Coefficient

Question 9 **4 marks**

Circle the like terms for each of the following sets

a) $2m,\ 3x,\ 6a,\ 16x,\ 2b$

b) $4mn,\ 3m,\ 4,\ 2nm,\ mn,\ 2n$

c) $2mw,\ 3km,\ 4w,\ 5mw,\ 6m,\ 7aw$

d) $x^2y,\ 2x,\ 3y,\ 4x^2y$

Question 10 **6 marks**

Simplify the following expressions by <u>adding</u> like terms.

a) $6a + 3a$ = $9a$

b) $4ab + 2ab + 3ab$ = 7ab.

Simplify the following expressions by subtracting like terms:

c) $8x - 2x$ = 6x

d) $35gh - 15gh$ = 20gh.

Simplify the following by adding or subtracting like terms:

e) $12f + 15f - 18f$ = 9f.

f) $5mn + 6mn - 4mn$ = 7mn.

Question 11 **6 marks**

Simplifying each of the following algebraic expressions:

a) $3x + 4 + 5x + 6$ = 8x + 10.

b) $4m - 6 + 4m + 10$ = 8m + 4.

c) $2 \times a$ = 2a

d) $3b \times 5$ = 15b

e) $2g \times 3g$ = $6g^2$

f) $18yz \div 9yz$ = 2

Year 7

Test 1 – Number and Algebra

No Resources allowed

Baldivis Secondary College

Name: Answers Class: _____ Time: 10 minutes Total Mark:____/10

Each question is multiple choice and worth one mark. Circle the correct answers.

1. Ted uses sticks to make a pattern.
   He starts with 2 sticks for stage 1.

Stage 1	Stage 2	Stage 3	Stage 4
			
2 sticks	6 sticks	12 sticks	20 sticks

   How many sticks does he need for Stage 6?

   A. 24

   B. 26

   C. 30

   D. 42

2. Which of these list contains only prime numbers?

   A. 2, 3, 6, 7

   B. 1,2,3,5

   C. 1,2,3,4

   D. 2,3,5,7

3. What is the value of 12^2?

   A. 12

   B. 24

   C. 144

   D. 196

4. Which of the following statements is **not** true?

   A. $2 + 3 = 3 + 2$

   B. $2 - 3 = 3 - 2$

   C. $2 \times 3 = 3 \times 2$

   D. $(2 \times 3) \times 5 = 2 \times (3 \times 5)$

5. At a ski resort the morning temperature was $-11°C$.
   In the afternoon the temperature was $5°C$.
   What was the change of temperature?

   A. Decrease of $16°C$

   B. Decrease of $6°C$

   C. increase of $6°C$

   D. Increase of $16°C$

6. Which of the numbers below shows the missing number in $? \times 7 = 21$?

   A. 3

   B. 149

   C. 1

   D. 7

7. Which of the following is **NOT** a factor of 40?

   A. 1

   B. 4

   C. 12

   D. 8

8. Which of the following is the correct answer to $2 + 3 \times 5 - 1$

A. 24

B. 16

C. 20

D. 14

9. Which of the following is the correct answer to $-3 - -7$

A. 4

B. -10

C. -4

D. 14

10. Which of the following statements is true for the expression $2x + 7y - 3$

A. The constant term is 3

B. The coefficient of x is 3

C. The coefficient of y is -3

D. The constant term is -3

[10 marks]