

**Title:** Algebraic Expressions from Diagrams

**Learning Objectives:**

By the end of the lesson:

- All students should be able to write an algebraic expression involving a single unknown.
- Most students should be able to identify and collect like terms to simplify algebraic expressions.
- Some students should be able to write a simplified algebraic expression involving brackets.

**Key words:** Algebraic expression, simplify, like terms, brackets.

**Learning Activities**

Starter/Introduction

Students recap writing algebraic expressions using keywords. Students may benefit from having a glossary of key words and their associated operations.

Slide 1

$6 \times u$ , Product of 6 and  $u$ ,  $6u$ , 6 lots of  $u$ ,  $u + u + u + u + u + u$

$1 + u + 5$ ,  $u + 6$ , 6 more than  $u$

$u \div 6$ ,  $u/6$ , 6 equal parts of  $u$

Development

Demonstrate finding the area of the composite shapes using the values  $x$  and  $y$ . Discuss how  $x + x + x$  is written as  $3x$ . Students often struggle writing the expression for  $d$ ). Given enough time they often get to  $x - y$ .

Slide 2

a)  $3x + y$ , b)  $x + 2y$ , c)  $4y$ , d)  $x - y$ , e)  $5x + 4y$

Slide 3

a)  $4x + 4y / 4(x + y)$  b)  $2x + 6y / 2(x + 3y)$ , c)  $4x - 4y / 4(x - y)$ . d)  $3x + 6y / 3(x + 2y)$  e)  $4x - 2y / 2(2x - y)$  f)  $8x - 8y / 8(x - y)$

Plenary

Students create the composite shapes given the area in terms of  $w$ ,  $h$  and  $t$ . An extension to this could be to have students work in pairs to create their own shapes and derive each other's simplified area.

Differentiation

More able:

- Students could present the areas using simplified brackets.

Less Able

- Students may benefit from working with a single shape.