

Name : \_\_\_\_\_

## Factors: Algebraic Identities

ES1

Factorize each expression using algebraic identities.

1)  $x^3 + 125$

2)  $u^3 - v^3$

3)  $q^3 + \frac{1}{r^3}$

4)  $m^3n^3 + 27$

5)  $g^3 + h^3$

6)  $d^3 - 8$

7)  $s^3t^3 - u^3$

8)  $\frac{1}{y^3} - \frac{1}{z^3}$

9)  $\frac{1}{c^3} - 64$

10)  $a^3 + 343$

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## Answer key

ES1

### Factors: Algebraic Identities

Factorize each expression using algebraic identities.

1)  $x^3 + 125$

$$(x + 5)(x^2 - 5x + 25)$$

2)  $u^3 - v^3$

$$(u - v)(u^2 + uv + v^2)$$

3)  $q^3 + \frac{1}{r^3}$

$$\left(q + \frac{1}{r}\right)\left(q^2 - \frac{q}{r} + \frac{1}{r^2}\right)$$

4)  $m^3n^3 + 27$

$$(mn + 3)(m^2n^2 - 3mn + 9)$$

5)  $g^3 + h^3$

$$(g + h)(g^2 - gh + h^2)$$

6)  $d^3 - 8$

$$(d - 2)(d^2 + 2d + 4)$$

7)  $s^3t^3 - u^3$

$$(st - u)(s^2t^2 + stu + u^2)$$

8)  $\frac{1}{y^3} - \frac{1}{z^3}$

$$\left(\frac{1}{y} - \frac{1}{z}\right)\left(\frac{1}{y^2} + \frac{1}{yz} + \frac{1}{z^2}\right)$$

9)  $\frac{1}{c^3} - 64$

$$\left(\frac{1}{c} - 4\right)\left(\frac{1}{c^2} + \frac{4}{c} + 16\right)$$

10)  $a^3 + 343$

$$(a + 7)(a^2 - 7a + 49)$$