

**Factor polynomial expressions completely**

- 1** Which answer is the same expression as this

$$21x^2 - 14x$$

- | | |
|----------------|--------------|
| A $3(7x + x)$ | B $7(x + x)$ |
| C $2(3x - x)$ | D $x(x + 3)$ |
| E $7x(3x - 2)$ | |

- 2** Which answer is the same expression as this

$$35rz - 10r$$

- | | |
|----------------|--------------|
| A $2r(z - 2)$ | B $z(r + 2)$ |
| C $5r(7z - 2)$ | D $2(r - z)$ |
| E $2(r + z)$ | |

- 3** Remove a common factor from this quadratic to make it easier to factor

$$6x^2 - 48x + 72$$

- | |
|----------------------|
| A $6(x^2 - 8x + 12)$ |
| B $6(x^2 + 12x - 8)$ |

- 4** Factor the quadratic now that the common factor has been removed

$$7(y^2 + 4y - 21)$$

- | |
|---------------------|
| A $7(y - 7)(y - 3)$ |
| B $7(y + 7)(y - 3)$ |

- 5** Find common factors of the first 2 and last 2 terms

$$27m^2 + 6m + 72m + 16$$

- | |
|----------------------------|
| A $3m(9m + 2) + 8(9m + 2)$ |
| B $9m(3m + 2) - 8(3m + 2)$ |

- 6** Is this factoring step correct?

$$\begin{aligned} x^3 + 8x^2 + 3x + 24 \\ = x^2(x + 8) + 3(x + 8) \end{aligned}$$

- | | |
|----------|---------|
| A
Yes | B
No |
|----------|---------|

- 7** Consolidate the shared common factor to create 2 binomial factors

$$z^2(z - 3) + 6(z - 3)$$

- | |
|----------------------|
| A $(z + 3)(z^2 + 6)$ |
| B $(z - 3)(z^2 + 6)$ |

- 8** Use grouping to remove a factor from this order 3 polynomial

$$n^3 - 3n^2 - 36n + 108$$

- | |
|-----------------------|
| A $(n - 3)(n^2 - 36)$ |
| B $(n + 3)(n^2 + 36)$ |

**Factor polynomial expressions completely****9**

Factor the 2nd order polynomial to give three binomial factors

$$(m - 7)(m^2 - 4)$$

A

$$(m - 7)(m - 2)(m - 2)$$

B

$$(m - 7)(m - 2)(m + 2)$$

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Is this factoring step correct?

$$8w^3 + 27 \\ = (2w + 8)(4w^2 - 6w + 9)$$

A

Yes

B

No

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Use grouping to factor this order 3 polynomial fully

$$q^3 - 6q^2 - 16q + 96$$

A

$$(q - 6)(q - 4)(q + 4)$$

B

$$(q - 6)(q + 4)(q + 4)$$

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Which answer is the same expression as this

$$n^2 + 3n - 10$$

A

$$(10n - 2)(n + 5)$$

B

$$(n - 2)(n + 5)$$

C

$$(3n + 2)(n - 5)$$

D

$$(n + 2)(n - 5)$$

E

$$(n + 2)(3n - 5)$$

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Which answer is the same expression as this

$$6z^2 + 19z + 10$$

A

$$(2z + 2)(z + 5)$$

B

$$(3z + 2)(2z + 5)$$

C

$$(19z + 2)(3z + 5)$$

D

$$(z - 2)(19z + 5)$$

E

$$(3z + 2)(z + 5)$$

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Use factor theorem and synthetic division to fully factor this polynomial.

$$x^3 - 2x^2 - 7x - 4$$

A

$$(x + 3)(x + 3)(x + 2)$$

B

$$(x - 1)(x + 3)(x - 2)$$

C

$$(x + 1)(x - 4)(x + 1)$$

D

$$(x - 3)(x + 3)(x + 3)$$