

FACTORISATION AND EXPANSION YEARS 9 AND 10

1 The highest common factor of $3x$, $4x^2y^2$ and $9xy$ is: -

- | | |
|----------|----------|
| A x | B y |
| C $3x$ | D xy |

2 When $20x^2y - 15xy$ is fully factorised, the answer is:

- | | |
|---------------------|----------------------|
| A $x(20xy - 15y^2)$ | B $5(4x^2y - 3xy^2)$ |
| C $5xy(4x - 3)$ | D $5xy(4x - 3y)$ |

3 The expanded form of $(x + 7)^2$ is:

- | | |
|--------------|--------------------|
| A $x^2 + 49$ | B $x^2 + 14x + 49$ |
| C $x^2 - 49$ | D $x^2 + 7x + 49$ |

4 The factors of $x^2 - 81$ are:

- | | |
|--------------------|---------------------|
| A $(x + 9)^2$ | B $(x - 9)^2$ |
| C $(x + 9)(x - 9)$ | D $(x - 81)(x + 1)$ |

5 The expanded form of $(2x - 3)(2x + 3)$ is:

- | | |
|--------------|-------------------|
| A $4x^2 - 9$ | B $4x^2 - 6$ |
| C $2x^2 - 3$ | D $4x^2 - 6x + 9$ |

6 The perfect square from the following list is:

- | | |
|-------------------|------------------|
| A $x^2 + 16$ | B $x^2 - 16$ |
| C $x^2 - 8x + 16$ | D $x^2 - 9x + 9$ |

7 The factors of $2x^2 - 5x - 3$ are:

- | | |
|---------------------|---------------------|
| A $(2x + 3)(x - 1)$ | B $(2x - 1)(x + 3)$ |
| C $(2x - 1)(x - 3)$ | D $(2x + 1)(x - 3)$ |

8 The expression which *cannot* be factorised is:

- | | |
|------------------|-------------------|
| A $x^2 - 7$ | B $x^2 + 16$ |
| C $x^2 - 2x + 1$ | D $(x + 2)^2 - 4$ |

9 The expanded form of $(3x-11)^2$ is:

- | | |
|----------------------|----------------------|
| A $9x^2 + 121$ | B $9x^2 - 121$ |
| C $9x^2 - 66x - 121$ | D $9x^2 - 66x + 121$ |

- 10 To complete the square for the expression $x^2 - 10x$, the third term which is required is:**
- | | |
|-------|--------|
| A -25 | B +100 |
| C +25 | D +20 |
- 11 The factors of $2x^2 + 7x - 4$ are:**
- | | |
|---------------------|---------------------|
| A $(2x + 7)(x - 4)$ | B $(2x - 1)(x + 4)$ |
| C $(2x + 1)(x - 4)$ | D $(2x + 4)(x - 1)$ |
- 12 The solutions of $(x + 3)(3x + 1) = 0$ are:**
- | | |
|-----------------------|-------------------------|
| A -3 and -1 | B 3 and 1 |
| C 3 and $\frac{1}{3}$ | D -3 and $-\frac{1}{3}$ |
- 13 The factors of $(x + 2)^2 - 9$ are:**
- | | |
|--------------------|--|
| A $(x + 5)(x - 1)$ | B $(x + 11)(x - 7)$ |
| C $(x + 3)(x - 7)$ | D $(x + 2 + \sqrt{3})(x + 2 - \sqrt{3})$ |
- 14 The expanded form of $-3x^2(x - 3y + 1)$ is:**
- | | |
|--------------------------|--------------------------|
| A $-3x^3 - 9x^2y + 3x^2$ | B $-3x^3 + 9x^2y - 3x^2$ |
| C $-3x^3 + 9x^2y$ | D $-3x^3 + 9x^2y + 3x^2$ |
- 15 The factors of $(x + 4)^2 + 16$ are:**
- | | |
|--|---------------------------------------|
| A $x(x + 8)$ | B $(x + 4)(x + 16)$ |
| C $(x + 4 + \sqrt{16})(x + 4 - \sqrt{16})$ | D the expression cannot be factorised |
- 16 The factors of $25x^2 + 70xy + 49y^2$ are:**
- | | |
|------------------------|------------------------|
| A $(5x + 7)(5 + 7y)$ | B $(5x + 7y)^2$ |
| C $(5x + 49y)(5x + y)$ | D $(25x + y)(x + 49y)$ |
- 17 The *simplest* factors of $10a^2 + 15a + 5$ are:**
- | | |
|----------------------|----------------------|
| A $(10a + 5)(a + 1)$ | B $(5a + 5)(2a + 1)$ |
| C $5(2a + 1)^2$ | D $5(2a + 1)(a + 1)$ |

18 The *simplest* factors of $(2x + 7)^2 - 5$ are:

- A $(2x + 12)(2x + 2)$
- B $(2x + 7 + \sqrt{5})(2x - 7 - \sqrt{5})$
- C $(2x + 7 + \sqrt{5})(2x + 7 - \sqrt{5})$
- D the expression cannot be factorised

19 The *simplest* factors of $18 - 2a^2$ are:

- A $-2(a^2 + 9)$
- B $-2(a + 3)^2$
- C $-2(a + 3)(a - 3)$
- D $(9 - 2a)(2 + a)$

20 For the expression $x^2 - 6x + 2$, the factors are:

- A $(x - 6)(x + 2)$
- B $(x - 3 - \sqrt{7})(x - 3 + \sqrt{7})$
- C $(x - 3 - \sqrt{7})(x + 3 + \sqrt{7})$
- D There are no real factors

21 The *simplest* factors of $75a^2 - 27$ are:

- A $3(25a^2 - 9)$
- B $(25a + 9)(3a - 3)$
- C $3(25a + 9)(a - 1)$
- D $3(5a + 3)(5a - 3)$

22 The *simplest* expression for $(x + 3)^2 - (x - 1)^2$ is:

- A $4(2x + 2)$
- B $8(x + 1)$
- C $4(x + 1)$
- D 4

23 The *simplest* expression for the following fraction is:

$$\frac{x^2 - 1}{x^2 + 2x + 1}$$

- A 1
- B $-\frac{1}{2x + 1}$
- C $\frac{x - 1}{x + 1}$
- D The same, since the fraction cannot be simplified.

24 The expanded form of $2(x + 8)(x - 4)$ is:

- A $2x^2 + 4x - 32$
- B $2x^2 + 8x - 64$
- C $2x^2 - 32$
- D $4x^2 + 16x - 128$

25 The factorised form of $3m^2 - 3mn - m + n$ is:

- A $(3m - 1)(m - n)$
- B $(3m + 1)(m - n)$
- C $-(3m - 1)(m + n)$
- D The expression cannot be factorised.

26 The fully factorised form of $\sqrt{8}xy - \sqrt{2}y$ is:

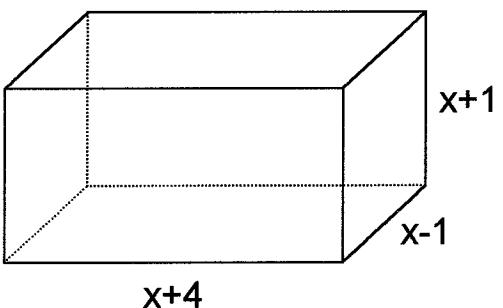
A $y(\sqrt{8}x - \sqrt{2})$
C $\sqrt{6}(x - 1)$

B $\sqrt{2}y(2x - 1)$
D $\sqrt{6}y(x - 1)$

27 To complete the square for $x^2 - x$, the third term must be:

A 1
B $-\frac{1}{4}$
C $\frac{1}{2}$
D $\frac{1}{4}$

28

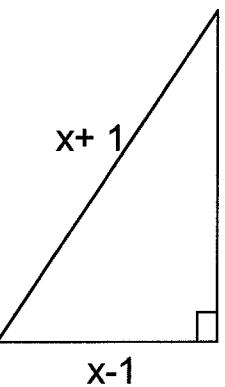


The volume of the box shown is given by:

A $x^3 - 4$
C $x^3 + 4x^2 - x - 4$

B $3x + 4$
D $x^4 + 5x^3 + 3x^2 - 5x - 4$

29



For the right-angled triangle shown, the third side must have the value:

A $2\sqrt{x}$ units
C $2x^2 + 2$ units

B $4x$ units
D 2 units

30 The expansion of $(x - y)^3$ is:

A $x^3 - y^3$
C $x^3 - 3x^2y - 3xy^2 + y^3$

B $x^3 - 3x^2y + 3xy^2 - y^3$
D $x^3 - 6xy + y^3$

ANSWERS TO FACTORISATION & EXPANSION

1	A	2	C	3	B	4	C	5	A	6	C
7	D	8	B	9	D	10	C	11	B	12	D
13	A	14	B	15	D	16	B	17	D	18	C
19	C	20	B	21	D	22	B	23	C	24	B
25	A	26	B	27	D	28	C	29	A	30	B