



Simplify the following terms. All work must be shown.

SECTION 1:

1 Are the following statements true or false? Correct the statements which are false.

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| a $\frac{3a + b}{2}$ is an equation. | b $\frac{a}{b} + c$ is an expression. |
| c $2x + 3 = 5$ is an equation. | d $2x + 3 - 8y$ is an equation. |
| e $2x + 4 - 3y$ has 3 terms. | |
| f The coefficient of x in $2y - 5x + 8$ is 5. | |
| g The constant term in $5x - 11y - 6$ is 6. | |

SECTION 2:

1 Simplify, where possible, by collecting like terms:

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|------------------------|--------------------------|----------------------|---------------------------|
| a $5 + a + 4$ | b $6 + 3 + a$ | c $m - 2 + 5$ | d $x + 1 + x$ |
| e $f + f - 3$ | f $5a + a$ | g $5a - a$ | h $a - 5a$ |
| i $x^2 + 2x$ | j $d^2 + d^2 + d$ | k $5g + 5$ | l $x^2 - 5x^2 + 5$ |
| m $2a + 3a - 5$ | n $2a + 3a - a$ | o $4xy + xy$ | p $3x^2z - x^2z$ |

2 Simplify, where possible:

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|---------------------------------|-----------------------------|---------------------------------|
| a $7a - 7a$ | b $7a - a$ | c $7a - 7$ |
| d $xy + 2yx$ | e $cd - 2cd$ | f $4p^2 - p^2$ |
| g $x + 3 + 2x + 4$ | h $2 + a + 3a - 4$ | i $2y - x + 3y + 3x$ |
| j $3m^2 + 2m - m^2 - m$ | k $ab + 4 - 3 + 2ab$ | l $x^2 + 2x - x^2 - 5$ |
| m $x^2 + 5x + 2x^2 - 3x$ | n $ab + b + a + 4$ | o $2x^2 - 3x - x^2 - 7x$ |

3 Simplify, where possible:

- | | | |
|----------------------------------|-------------------------------|------------------------------------|
| a $4x + 6 - x - 2$ | b $2c + d - 2cd$ | c $3ab - 2ab + ba$ |
| d $x^2 + 2x^2 + 2x^2 - 5$ | e $p^2 - 6 + 2p^2 - 1$ | f $3a + 7 - 2a - 10$ |
| g $-3a + 2b - a - b$ | h $a^2 + 2a - a^3$ | i $2a^2 - a^3 - a^2 + 2a^3$ |
| j $4xy - x - y$ | k $xy^2 + x^2y + x^2y$ | l $4x^3 - 2x^2 - x^3 - x^2$ |

SECTION 3:

1 Simplify:

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|----------------------------|----------------------------------|------------------------------|
| a $x + x$ | b $c + c + c$ | c $a + a + b + b$ |
| d $a + a + a + b$ | e $3 + x + x + y$ | f $a + a + b + b + b$ |
| g $g + g + 2 + g$ | h $3 - (a + a)$ | i $y + y + y + y - 4$ |
| j $6 - (b + b + b)$ | k $4 + t + t + s + s + s$ | l $2 \times (m + m)$ |

SECTION 4:

1 If $x = 5$ and $y = 6$, find the values of the following expressions:

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|-----------------------|-------------------------|------------------------|
| a $4x$ | b $x + 2y$ | c $2(x + y)$ |
| d $3y - 3x$ | e $3(x - y)$ | f $3x - y$ |
| g $2(5x - 2y)$ | h $5(y - x) + 2$ | i $2(3x - 2y)$ |
| j $2y - 5$ | k $16 - 2x$ | l $5 + 2y - 3x$ |

2 If $a = 3$, $b = 2$ and $c = 5$, find the value of:

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|------------------|------------------|---------------------|--------------------|
| a $a + b$ | b $2a$ | c c^2 | d bc |
| e $c - b$ | f $b - c$ | g $2ac$ | h $2a^2$ |
| i $3bc$ | j $4ab^2$ | k $a(b + c)$ | l $ab + ac$ |

3 If $m = 4$, $n = 2$, $g = 0$ and $h = 5$, evaluate:

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|--------------------|-------------------|---------------------|--------------------|
| a $3m + n$ | b $m + 3n$ | c $3(m + n)$ | d $3m + 3n$ |
| e m^2 | f $2m^2$ | g $(2m)^2$ | h $mn - gh$ |
| i $3n$ | j $(3n)^2$ | k $2n^2$ | l $2g - 6$ |
| m $gm - nh$ | n $5n^3$ | o hn^2 | p $(hn)^2$ |

4 Given $p = 2$, $q = -3$, $r = -1$, and $s = -5$, evaluate:

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|----------------------|--------------------|----------------------|---------------------|
| a q^2 | b $2pq$ | c $3p^2$ | d r^3 |
| e qrs | f $q^2 + s$ | g $s - q^2$ | h $pq + rs$ |
| i $p^2 - q^2$ | j $p + q^2$ | k $(p + q)^2$ | l $2p - 3qs$ |

SECTION 5:

1 If $a = 3$, $b = 2$, $c = 6$, evaluate:

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|-------------------------|--------------------------|--------------------------|----------------------------|-----------------------------|
| a $\frac{c}{2}$ | b $\frac{c}{a}$ | c $\frac{a}{c}$ | d $\frac{c}{b - a}$ | e $\frac{a + c}{b}$ |
| f $\frac{ab}{c}$ | g $\frac{a^2}{b}$ | h $\frac{c^2}{a}$ | i $\frac{ab^2}{c}$ | j $\frac{(ab)^2}{c}$ |

2 If $a = 2$, $b = -3$ and $c = -4$, evaluate:

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|-----------------------------|----------------------------|--------------------------------|------------------------------|------------------------------|
| a $\frac{c}{a}$ | b $\frac{a}{c}$ | c $\frac{-1}{b}$ | d $\frac{c^2}{a}$ | e $\frac{c}{a + b}$ |
| f $\frac{a - c}{2b}$ | g $\frac{b}{c - a}$ | h $\frac{a - c}{a + c}$ | i $\frac{c - a}{b^2}$ | j $\frac{a^2}{c - b}$ |

SECTION 6:

Simplify the following by expression:

1. **a** $a^4b^5 \times a^2b^2$ **b** $6xy^5 \div 9x^2y^5$

2. **a** $(a^7)^3$ **b** $pq^2 \times p^3q^4$