

Aufgaben zum Ausmultiplizieren und Ausklammern

1.0 Berechnen Sie.

1.1 $8(5a + 7b - 6c) + 11(5a - 4b + 9c) - 12(3a - 6b + 7c)$

1.2 $25(2a + 3b - 5) - 16(4a - 6b) + 12(9 - 7b) - 14(5 - 3a)$

1.3 $x(x - 3y) - y(3x - y)$

1.4 $u(3u + 4w) - 2w(4u + 6w)$

2.0 Vereinfachen Sie.

2.1 $a(a - 5) - 6a^2 + 9a(8a + 7) - 4a(3 + 5a)$

2.2 $14c(8x - 3y + 7c) + 13x(9c - 8y + 2x) - 11y(7x - 6c + 11y)$

2.3 $(4m^2 - 5nm)2n - 4n(3mn + 7m^2) - 8mn(4n - 3m)$

3.0 Klammern Sie aus.

3.1 $17x + 17y$

3.2 $14a - 14b$

3.3 $20x - 25y$

3.4 $-77a + 56b$

3.5 $144x - 108y$

3.6 $-289p - 187q$

3.7 $5ax + 5ay$

3.8 $2x^2y - zx^2$

3.9 $-m^2qt + m^2$

4.0 Vereinfachen Sie folgende Terme.

$$4.1 \quad 54(x + y + z) - 33(x - y + z) + 42(x + y - z) - 53(y - z - x)$$

$$4.2 \quad (2a + 3b + 4c) \cdot 13 - (3a - 5 - 6c) \cdot 16 - (5b - 12 - 2a) \cdot 14 - 8 \cdot (7a + 21)$$

$$4.3 \quad 4(u + 2v - 3) + 6u - (3u - 5v - 7) \cdot 7 - 9v - 14(2u - 3v)$$

$$4.4 \quad 0,4x(0,6x - 0,9y) - 0,7y(1,3y - 2,2x)$$

$$4.5 \quad 3\frac{1}{2}a \cdot \left(3\frac{2}{7}a - 5\frac{1}{3}b\right) - 1\frac{3}{4}b \cdot \left(2\frac{5}{7}a + 6\frac{1}{3}b\right)$$

$$4.6 \quad 2\frac{6}{7}x \cdot \left(2\frac{4}{5}x - 16\frac{1}{3}y\right) - 4\frac{4}{9}y \cdot \left(3\frac{3}{5}x - 5\frac{5}{8}y\right)$$

Lösungen

$$1.1 \ 40a + 56b - 48c + 55a - 44b + 99c - 36a + 72b - 84c = 59a + 84b - 33c$$

$$1.2 \ 50a + 75b - 125 - 64a + 96b + 108 - 84b - 70 + 42a = 28a + 87b - 87$$

$$1.3 \ x^2 - 3xy - 3xy + y^2 = x^2 - 6xy + y^2$$

$$1.4 \ 3u^2 + 4uw - 8uw - 12w^2 = 3u^2 - 4uw - 12w^2$$

$$2.1 \ a^2 - 5a - 6a^2 + 72a^2 + 63a - 12a - 20a^2 = 47a^2 + 46a$$

$$2.2 \ 112cx - 42cy + 98c^2 + 117cx - 104xy + 26x^2 - 77xy + 66cy - 121y^2 = \\ = 229cx + 24cy + 98c^2 - 181xy + 26x^2 - 121y^2$$

$$2.3 \ 8m^2n - 10mn^2 - 12mn^2 - 28m^2n - 32mn^2 + 24m^2n = 4m^2n - 54mn^2$$

$$3.1 \ 17(x + y)$$

$$3.2 \ 14(a - b)$$

$$3.3 \ 5(4x - 5y)$$

$$3.4 \ 7(-11a + 8b)$$

$$3.5 \ 36(4x - 3y)$$

$$3.6 \ -17(17p + 11q)$$

$$3.7 \ 5a(x + y)$$

$$3.8 \ x^2(2y - z)$$

$$3.9 \ m^2(-qt + 1)$$

$$4.1 \ 54x + 54y + 54z - 33x + 33y - 33z + 42x + 42y - 42z - 53y + 53z + 53x = \\ = 116x + 76y + 32z$$

$$4.2 \ 26a + 39b + 52c - 48a + 80 + 96c - 70b + 168 + 28a - 56a - 168 = \\ = -50a - 31b + 148c + 80$$

$$4.3 \ 4u + 8v - 12 + 6u - 21u + 35v + 49 - 9v - 28u + 42v = -39u + 76v + 37$$

$$4.4 \ 0,24x^2 - 0,36xy - 0,91y^2 + 1,54xy = 0,24x^2 + 1,18xy - 0,91y^2$$

$$4.5$$

$$\frac{7}{2}a \cdot \left(\frac{23}{7}a - \frac{16}{3}b \right) - \frac{7}{4}b \cdot \left(\frac{19}{7}a + \frac{19}{3}b \right) = \frac{23}{2}a^2 - \frac{56}{3}ab - \frac{19}{4}ab - \frac{133}{12}b^2 = \\ = 11\frac{1}{2}a^2 - 23\frac{5}{12}ab - 11\frac{1}{12}b^2$$

4.6

$$\begin{aligned} & \frac{20}{7}x \cdot \left(\frac{14}{5}x - \frac{49}{3}y \right) - \frac{40}{9}y \cdot \left(\frac{18}{5}x - \frac{45}{8}y \right) = \\ & = 8x^2 - \frac{140}{3}xy - 16xy + 25y^2 = 8x^2 - 62\frac{2}{3}xy + 25y^2 \end{aligned}$$