

Herausheben gemeinsamer Faktoren

(faktorisieren)

Erklärvideo



t1p.de/terme17

LearningSnack



t1p.de/terme18

Onlineübungen



erklaerung-und-mehr.org

Aufgabenstellung: Suche den größten Faktor, der herausgehoben werden kann!

1. $12ab - 3b =$	(R) $3b$	(M) 3	(F) $3ab$
2. $9y + 12z =$	(X) $3y$	(G) $3yz$	(E) 3
3. $2e + 2 =$	(I) 2	(O) $2e$	(F) 1
4. $8ab - 12ac + 16a =$	(B) $8a$	(S) $4a$	(Z) $2a$
5. $4a^2x + 6ay =$	(S) $4a$	(E) $2a$	(A) $2a^2$
6. $12ab^2x + 15ab =$	(G) $3ab$	(B) $3ab^2$	(P) 3
7. $9a^3b^2 + 6a^3b^3 =$	(W) $3a^3b$	(E) $3a^3b^2$	(U) $3ab$
8. $15a^3b^2 - 12a^2b^3 =$	(S) $3a^2b^2$	(N) $3ab$	(B) $5ab^2$
9. $12a - 9b + 15 =$	(T) $3a$	(B) $3ab$	(C) 3
10. $9a + 12b - 18 =$	(F) $3a$	(H) 3	(P) 6
11. $24xy - 16ay + 12y =$	(B) 4	(W) $4y$	(R) $2y$
12. $9a^2x^2 - 3ax =$	(I) $3ax$	(M) $3a$	(W) $3x$
13. $16a^3b + 12ab^2 =$	(V) $4a$	(B) $4b$	(N) $4ab$
14. $12a^2x^2 - 9ax^3 =$	(A) $3ax$	(D) $3ax^2$	(Y) $3x^2$
15. $(x + 1) \cdot 4x + (x + 1) \cdot 5y =$	(I) $(x + 1)$	(R) x	(Z) $4x$
16. $(x - 3) \cdot 3 + (x - 3) \cdot 4x =$	(H) $(x + 4)$	(V) $(3x)$	(G) $(x - 3)$
17. $(2x + 3) \cdot 3x + (2x + 3) \cdot 4y =$	(K) $(2x + 3)$	(P) $(2x + 3y)$	(C) $(2x + 4y)$
18. $(x + 3) \cdot 3 + (x + 3) \cdot 4y =$	(S) $(x + 4y)$	(E) $(x + 3)$	(M) $(x + y)$
19. $(x + 5) \cdot 4x + (x + 5) \cdot 4 =$	(I) $(x + 5) \cdot 4$	(R) $(x + 5)$	(W) $(x + 4) \cdot 5$
20. $(x + 2) \cdot 4x + (x + 2) \cdot 8 =$	(A) $(x + 2)$	(K) 6	(T) $(x + 2) \cdot 4$

Lösungswort:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Aufgabenstellung: Ein gemeinsamer Faktor wurde schon herausgehoben. Vervollständige!

1. $12ab - 3b = 3b \cdot$	(N) $(4a - 1)$	(M) $(4a + 1)$	(F) $(4a)$
2. $9y + 12z = 3 \cdot$	(X) $(3y + 4)$	(G) $(9y + 4z)$	(E) $(3y + 4z)$
3. $2e + 2 = 2 \cdot$	(U) $(e + 1)$	(O) $(e + 0)$	(F) $(e + 2)$
4. $2a - 4b + 6 = 2 \cdot$	(B) $(a - 2 + 3)$	(J) $(a - 2b + 3)$	(Z) $(a - 2b - 3)$
5. $12a - 15b + 9 = 3 \cdot$	(S) $(4a - 5b - 3)$	(A) $(4a - 5b + 3)$	(G) $(4a - 5 + 3)$
6. $15a - 20b + 10 = 5 \cdot$	(H) $(3a - 4b + 2)$	(B) $(3a - 4 + 2)$	(P) $(3a - 4b + 3)$
7. $9a^3b^2 + 6a^3b^3 = 3a^3b^2 \cdot$	(W) $(3 + b^2)$	(R) $(3 + 2b)$	(U) $(a + b)$
8. $15a^3b^2 - 12a^2b^3 = 3a^2b^2 \cdot$	(S) $(5a - 4b)$	(N) $(5a^2 - 4b^2)$	(B) $(5b - 4a)$
9. $12a - 9b + 15 = 3 \cdot$	(T) $(4a - b + 5)$	(B) $(4 - 3b + 5)$	(G) $(4a - 3b + 5)$
10. $9a + 12b - 18 = 3 \cdot$	(F) $(3a + 2b - 6)$	(L) $(3a + 4b - 6)$	(P) $(3 + 4b + 6)$
11. $24xy - 16ay + 12y = 4y \cdot$	(B) $(6x - a + 3)$	(Ü) $(6x - 4a + 3)$	(R) $(3x - 4a + 3)$
12. $9a^2x^2 - 3ax = 3ax \cdot$	(C) $(3ax - 1)$	(M) $(ax - 1)$	(W) $(ax - 0)$
13. $16a^3b + 12ab^2 = 4ab \cdot$	(V) $(4a + 3b)$	(B) $(4 + 3b)$	(K) $(4a^2 + 3b)$
14. $12a^2x^2 - 9ax^3 = 3ax^2 \cdot$	(A) $(4 - 3x)$	(W) $(4a - 3x)$	(Y) $(4a - x)$
15. $(x + 1) \cdot 4x + (x + 1) \cdot 5y = (x + 1) \cdot$	(Ü) $(4x + 5y)$	(R) $(4 + 5y)$	(Z) $(4y + 5x)$
16. $(x - 3) \cdot 3 + (x - 3) \cdot 4x = (x - 3) \cdot$	(H) $(x + 4)$	(V) $(3x + 4)$	(N) $(3 + 4x)$
17. $(2x + 3) \cdot 3x + (2x + 3) \cdot 4y = (2x + 3) \cdot$	(S) $(3x + 4y)$	(P) $(3 + 4)$	(C) $(3x + 4)$
18. $(x + 3) \cdot 3 + (x + 3) \cdot 4y = (x + 3) \cdot$	(S) $(3y + 4)$	(C) $(3 + 4y)$	(M) $(3 + y)$
19. $(x + 5) \cdot 4x + (x + 5) \cdot 4 = (x + 5) \cdot 4 \cdot$	(H) $(x + 1)$	(R) $(x + 4)$	(W) $(x + 5)$
20. $(x + 2) \cdot 4x + (x + 2) \cdot 8 = (x + 2) \cdot 4 \cdot$	(A) $(x + 4)$	(K) $(3 + 4b + 6)$	(E) $(x + 2)$

Lösungswort:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Aufgabenstellung: Hebe gemeinsame Faktoren heraus!

Level 1:

$6x - 9y =$

$8x - 8 =$

$4x - 6y =$

$5z - 10 =$

$4a + 8b =$

$6u + 15w =$

$4a - 2ab =$

$6x - 3xy =$

$3x + 6 =$

$8x + 8xy =$

$20ab - 15b =$

$12xy + 15bx =$

$12ab - 3b =$

$15ax + 5xy =$

$10ab + 5bc =$

$8ab - 8b =$

$9y + 12z =$

$9x + 6xy =$

$12e + 15v =$

$9ax - 12bx =$

$2e + 2 =$

$6abx - 3axy =$

$5a - 15ax =$

$4xy - 16x =$

Lösungen:

$2 \cdot (2x-3y)$

$3 \cdot (2x-3y)$

$3ax \cdot (2b-y)$

$3x \cdot (3a-4b)$

$5 \cdot (z-2)$

$5x \cdot (3a+y)$

$2 \cdot (e+1)$

$3 \cdot (3y+4z)$

$3b \cdot (4a-1)$

$3x \cdot (4y+5b)$

$5a \cdot (1-3x)$

$8 \cdot (x-1)$

$2a \cdot (2-b)$

$3 \cdot (4e+5v)$

$3x \cdot (3+2y)$

$4 \cdot (a+2b)$

$5b \cdot (2a+c)$

$8b \cdot (a-1)$

$3 \cdot (2u+5w)$

$3 \cdot (x+2)$

$3x \cdot (2-y)$

$4x \cdot (y-4)$

$5b \cdot (4a-3)$

$8x \cdot (1+y)$

Level 2:

$$2a - 4b + 6 =$$

$$12a - 15b + 9 =$$

$$12a - 9b + 15 =$$

$$15a - 20b + 10 =$$

$$9a + 12b - 18 =$$

$$8ab - 12ac + 16a =$$

$$24xy - 16ay + 12y =$$

$$4a^2x + 6ay =$$

$$9a^2x^2 - 3ax =$$

$$12ab^2x + 15ab =$$

$$16a^3b + 12ab^2 =$$

$$9a^3b^2 + 6a^3b^3 =$$

$$12a^2x^2 - 9ax^3 =$$

$$15a^3b^2 - 12a^2b^3 =$$

$$6x - 4y + 8z =$$

$$8x - 12y + 16 =$$

$$8x + 6y + 4 =$$

$$10x - 8y - 4 =$$

$$12ax - 4ay + 8a =$$

$$6ax - 12bx + 6x =$$

$$18az - 9a + 6ay =$$

$$12a^2b - 4ab^2 =$$

$$15a^2b - 5ab^2 =$$

$$25a^2x^3 - 15ax^2 =$$

$$18ab^2c + 12a^2bc^2 =$$

$$15a^2bx - 20ab^2y =$$

$$16ax^3 - 12ax^2 =$$

$$8a^2b^2c - 18ab^3c^2 =$$

Lösungen:

$$2 \cdot (3x-2y+4z)$$

$$2a \cdot (2ax+3y)$$

$$3 \cdot (4a-5b+3)$$

$$3ax \cdot (3ax-1)$$

$$4a \cdot (2b-3c+4)$$

$$4ab \cdot (3a-b)$$

$$5ab \cdot (3ax-4by)$$

$$2 \cdot (4x+3y+2)$$

$$2ab^2c \cdot (4a-9bc)$$

$$3a^2b^2 \cdot (5a-4b)$$

$$3ax^2 \cdot (4a-3x)$$

$$4ab \cdot (4a^2+3b)$$

$$4ax^2 \cdot (4x-3)$$

$$5ax^2 \cdot (5ax-3)$$

$$2 \cdot (5x-4y-2)$$

$$3 \cdot (3a+4b-6)$$

$$3a^3b^2 \cdot (3+2b)$$

$$3a \cdot (6z-3+2y)$$

$$4y \cdot (6x-4a+3)$$

$$5 \cdot (3a-4b+2)$$

$$6abc \cdot (3b+2ac)$$

$$2 \cdot (a-2b+3)$$

$$3 \cdot (4a-3b+5)$$

$$3ab \cdot (4bx+5)$$

$$4 \cdot (2x-3y+4)$$

$$4a \cdot (3x-y+2)$$

$$5ab \cdot (3a-b)$$

$$6x \cdot (a-2b+1)$$

Level 3:

$$8 \cdot (x + 3) + 4x \cdot (x + 3) =$$

$$4y \cdot (x - 7) + 3x \cdot (x - 7) =$$

$$(x + 3) \cdot 4x - 7y \cdot (x + 3) =$$

$$4x^2 \cdot (3x + 2) - 8x \cdot (3x + 2) =$$

$$21x^2 \cdot (x - 2) + 7x^3 \cdot (x - 2) =$$

$$4 \cdot (x + 1) - (x + 1) \cdot 3x + y \cdot (x + 1) =$$

$$(x + 3) \cdot 28x^3y^2 - 7xy \cdot (x + 3) =$$

$$12x^2 \cdot (3x + 2) - 6x \cdot (3x + 2) =$$

Lösungen:

$$6x \cdot (3x + 2) \cdot (2x - 1)$$

$$(x - 7) \cdot (4y + 3x)$$

$$(x + 1) \cdot (4 - 3x + y)$$

$$(x + 3) \cdot (4x - 7y)$$

$$4 \cdot (x + 3) \cdot (2 + x)$$

$$7xy \cdot (x + 3) \cdot (4x^2y - 1)$$

$$4x \cdot (3x + 2) \cdot (x - 2)$$

$$7x^2 \cdot (x - 2) \cdot (3 + x)$$

LÖSUNGEN

Herausheben gemeinsamer Faktoren

(faktorisieren)

Aufgabenstellung: Suche den größten Faktor, der herausgehoben werden kann!

1. $12ab - 3b =$	(R) <u>3b</u>	(M) 3	(F) $3ab$
2. $9y + 12z =$	(X) 3y	(G) $3yz$	(E) <u>3</u>
3. $2e + 2 =$	(I) <u>2</u>	(O) 2e	(F) 1
4. $8ab - 12ac + 16a =$	(B) 8a	(S) <u>4a</u>	(Z) 2a
5. $4a^2x + 6ay =$	(S) 4a	(E) <u>2a</u>	(A) $2a^2$
6. $12ab^2x + 15ab =$	(G) <u>3ab</u>	(B) $3ab^2$	(P) 3
7. $9a^3b^2 + 6a^3b^3 =$	(W) $3a^3b$	(E) <u>3a^3b^2</u>	(U) $3ab$
8. $15a^3b^2 - 12a^2b^3 =$	(S) <u>3a^2b^2</u>	(N) $3ab$	(B) $5ab^2$
9. $12a - 9b + 15 =$	(T) 3a	(B) $3ab$	(C) <u>3</u>
10. $9a + 12b - 18 =$	(F) 3a	(H) <u>3</u>	(P) 6
11. $24xy - 16ay + 12y =$	(B) 4	(W) <u>4y</u>	(R) 2y
12. $9a^2x^2 - 3ax =$	(I) <u>3ax</u>	(M) 3a	(W) 3x
13. $16a^3b + 12ab^2 =$	(V) 4a	(B) 4b	(N) <u>4ab</u>
14. $12a^2x^2 - 9ax^3 =$	(A) 3ax	(D) <u>3ax^2</u>	(Y) $3x^2$
15. $(x + 1) \cdot 4x + (x + 1) \cdot 5y =$	(I) <u>(x + 1)</u>	(R) x	(Z) 4x
16. $(x - 3) \cdot 3 + (x - 3) \cdot 4x =$	(H) $(x + 4)$	(V) $(3x)$	(G) <u>(x - 3)</u>
17. $(2x + 3) \cdot 3x + (2x + 3) \cdot 4y =$	(K) <u>(2x + 3)</u>	(P) $(2x + 3y)$	(C) $(2x + 4y)$
18. $(x + 3) \cdot 3 + (x + 3) \cdot 4y =$	(S) $(x + 4y)$	(E) <u>(x + 3)</u>	(M) $(x + y)$
19. $(x + 5) \cdot 4x + (x + 5) \cdot 4 =$	(I) <u>(x + 5) \cdot 4</u>	(R) $(x + 5)$	(W) $(x + 4) \cdot 5$
20. $(x + 2) \cdot 4x + (x + 2) \cdot 8 =$	(A) $(x + 2)$	(K) 6	(T) <u>(x + 2) \cdot 4</u>

Lösungswort:

R E I S E G E S C H W I N D I G K E I T
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Aufgabenstellung: Ein gemeinsamer Faktor wurde schon herausgehoben. Vervollständige!

1. $12ab - 3b = 3b \cdot$	(N) <u>(4a - 1)</u>	(M) $(4a + 1)$	(F) $(4a)$
2. $9y + 12z = 3 \cdot$	(X) $(3y + 4)$	(G) $(9y + 4z)$	(E) <u>(3y + 4z)</u>
3. $2e + 2 = 2 \cdot$	(U) <u>(e + 1)</u>	(O) $(e + 0)$	(F) $(e + 2)$
4. $2a - 4b + 6 = 2 \cdot$	(B) $(a - 2 + 3)$	(J) <u>(a - 2b + 3)</u>	(Z) $(a - 2b - 3)$
5. $12a - 15b + 9 = 3 \cdot$	(S) $(4a - 5b - 3)$	(A) <u>(4a - 5b + 3)</u>	(G) $(4a - 5 + 3)$
6. $15a - 20b + 10 = 5 \cdot$	(H) <u>(3a - 4b + 2)</u>	(B) $(3a - 4 + 2)$	(P) $(3a - 4b + 3)$
7. $9a^3b^2 + 6a^3b^3 = 3a^3b^2 \cdot$	(W) $(3 + b^2)$	(R) <u>(3 + 2b)</u>	(U) $(a + b)$
8. $15a^3b^2 - 12a^2b^3 = 3a^2b^2 \cdot$	(S) <u>(5a - 4b)</u>	(N) $(5a^2 - 4b^2)$	(B) $(5b - 4a)$
9. $12a - 9b + 15 = 3 \cdot$	(T) $(4a - b + 5)$	(B) $(4 - 3b + 5)$	(G) <u>(4a - 3b + 5)</u>
10. $9a + 12b - 18 = 3 \cdot$	(F) $(3a + 2b - 6)$	(L) <u>(3a + 4b - 6)</u>	(P) $(3 + 4b + 6)$
11. $24xy - 16ay + 12y = 4y \cdot$	(B) $(6x - a + 3)$	(Ü) <u>(6x - 4a + 3)</u>	(R) $(3x - 4a + 3)$
12. $9a^2x^2 - 3ax = 3ax \cdot$	(C) <u>(3ax - 1)</u>	(M) $(ax - 1)$	(W) $(ax - 0)$
13. $16a^3b + 12ab^2 = 4ab \cdot$	(V) $(4a + 3b)$	(B) $(4 + 3b)$	(K) <u>(4a^2 + 3b)</u>
14. $12a^2x^2 - 9ax^3 = 3ax^2 \cdot$	(A) $(4 - 3x)$	(W) <u>(4a - 3x)</u>	(Y) $(4a - x)$
15. $(x + 1) \cdot 4x + (x + 1) \cdot 5y = (x + 1) \cdot$	(Ü) <u>(4x + 5y)</u>	(R) $(4 + 5y)$	(Z) $(4y + 5x)$
16. $(x - 3) \cdot 3 + (x - 3) \cdot 4x = (x - 3) \cdot$	(H) $(x + 4)$	(V) $(3x + 4)$	(N) <u>(3 + 4x)</u>
17. $(2x + 3) \cdot 3x + (2x + 3) \cdot 4y = (2x + 3) \cdot$	(S) <u>(3x + 4y)</u>	(P) $(3 + 4)$	(C) $(3x + 4)$
18. $(x + 3) \cdot 3 + (x + 3) \cdot 4y = (x + 3) \cdot$	(S) $(3y + 4)$	(C) <u>(3 + 4y)</u>	(M) $(3 + y)$
19. $(x + 5) \cdot 4x + (x + 5) \cdot 4 = (x + 5) \cdot 4 \cdot$	(H) <u>(x + 1)</u>	(R) $(x + 4)$	(W) $(x + 5)$
20. $(x + 2) \cdot 4x + (x + 2) \cdot 8 = (x + 2) \cdot 4 \cdot$	(A) $(x + 4)$	(K) $(3 + 4b + 6)$	(E) <u>(x + 2)</u>

Lösungswort:

N E U J A H R S G L Ü C K W Ü N S C H E
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Aufgabenstellung: Hebe gemeinsame Faktoren heraus!

Level 1:

$$6x - 9y = 3 \cdot (2x-3y)$$

$$4x - 6y = 2 \cdot (2x-3y)$$

$$4a + 8b = 4 \cdot (a+2b)$$

$$4a - 2ab = 2a \cdot (2-b)$$

$$3x + 6 = 3 \cdot (x + 2)$$

$$20ab - 15b = 5b \cdot (4a-3)$$

$$12ab - 3b = 3b \cdot (4a-1)$$

$$10ab + 5bc = 5b \cdot (2a+c)$$

$$9y + 12z = 3 \cdot (3y+4z)$$

$$12e + 15v = 3 \cdot (4e+5v)$$

$$2e + 2 = 2 \cdot (e+1)$$

$$5a - 15ax = 5a \cdot (1-3x)$$

$$8x - 8 = 8 \cdot (x-1)$$

$$5z - 10 = 5 \cdot (z-2)$$

$$6u + 15w = 3 \cdot (2u+5w)$$

$$6x - 3xy = 3x \cdot (2-y)$$

$$8x + 8xy = 8x \cdot (1 + y)$$

$$12xy + 15bx = 3x \cdot (4y+5b)$$

$$15ax + 5xy = 5x \cdot (3a+y)$$

$$8ab - 8b = 8b \cdot (a-1)$$

$$9x + 6xy = 3x (3 + 2y)$$

$$9ax - 12bx = 3x \cdot (3a-4b)$$

$$6abx - 3axy = 3ax \cdot (2b-y)$$

$$4xy - 16x = 4x \cdot (y-4)$$

Level 2:

$$2a - 4b + 6 = 2 \cdot (a - 2b + 3)$$

$$12a - 15b + 9 = 3 \cdot (4a - 5b + 3)$$

$$12a - 9b + 15 = 3 \cdot (4a - 3b + 5)$$

$$15a - 20b + 10 = 5 \cdot (3a - 4b + 2)$$

$$9a + 12b - 18 = 3 \cdot (3a + 4b - 6)$$

$$8ab - 12ac + 16a = 4a \cdot (2b - 3c + 4)$$

$$24xy - 16ay + 12y = 4y \cdot (6x - 4a + 3)$$

$$4a^2x + 6ay = 2a \cdot (2ax + 3y)$$

$$9a^2x^2 - 3ax = 3ax \cdot (3ax - 1)$$

$$12ab^2x + 15ab = 3ab \cdot (4bx + 5)$$

$$16a^3b + 12ab^2 = 4ab \cdot (4a^2 + 3b)$$

$$9a^3b^2 + 6a^3b^3 = 3a^3b^2 \cdot (3 + 2b)$$

$$12a^2x^2 - 9ax^3 = 3ax^2 \cdot (4a - 3x)$$

$$15a^3b^2 - 12a^2b^3 = 3a^2b^2 \cdot (5a - 4b)$$

$$6x - 4y + 8z = 2 \cdot (3x - 2y + 4z)$$

$$8x - 12y + 16 = 4 \cdot (2x - 3y + 4)$$

$$8x + 6y + 4 = 2 \cdot (4x + 3y + 2)$$

$$10x - 8y - 4 = 2 \cdot (5x - 4y - 2)$$

$$12ax - 4ay + 8a = 4a \cdot (3x - y + 2)$$

$$6ax - 12bx + 6x = 6x \cdot (a - 2b + 1)$$

$$18az - 9a + 6ay = 3a \cdot (6z - 3 + 2y)$$

$$12a^2b - 4ab^2 = 4ab \cdot (3a - b)$$

$$15a^2b - 5ab^2 = 5ab \cdot (3a - b)$$

$$25a^2x^3 - 15ax^2 = 5ax^2 \cdot (5ax - 3)$$

$$18ab^2c + 12a^2bc^2 = 6abc \cdot (3b + 2ac)$$

$$15a^2bx - 20ab^2y = 5ab \cdot (3ax - 4by)$$

$$16ax^3 - 12ax^2 = 4ax^2 \cdot (4x - 3)$$

$$8a^2b^2c - 18ab^3c^2 = 2ab^2c \cdot (4a - 9bc)$$

Level 3:

$$8 \cdot (x + 3) + 4x \cdot (x + 3) = 4 \cdot (x + 3) \cdot (2 + x)$$

$$4y \cdot (x - 7) + 3x \cdot (x - 7) = (x - 7) \cdot (4y + 3x)$$

$$(x + 3) \cdot 4x - 7y \cdot (x + 3) = (x + 3) \cdot (4x - 7y)$$

$$4x^2 \cdot (3x + 2) - 8x \cdot (3x + 2) = 4x \cdot (3x + 2) \cdot (x - 2)$$

$$21x^2 \cdot (x - 2) + 7x^3 \cdot (x - 2) = 7x^2 \cdot (x - 2) \cdot (3 + x)$$

$$4 \cdot (x + 1) - (x + 1) \cdot 3x + y \cdot (x + 1) = 7x^2 \cdot (x - 2) \cdot (3 + x)$$

$$(x + 3) \cdot 28x^3y^2 - 7xy \cdot (x + 3) = 7xy \cdot (x + 3) \cdot (4x^2y - 1)$$

$$12x^2 \cdot (3x + 2) - 6x \cdot (3x + 2) = 6x \cdot (3x + 2) \cdot (2x - 1)$$