

$$1. \quad 100 \text{ g} + 8 \cdot 60 \text{ g} = 100 \text{ g} + 480 \text{ g} = \underline{580 \text{ g}}$$

$$4'000 \text{ g} - 580 \text{ g} = \underline{3'420 \text{ g}}$$

$$\Rightarrow 3'420 \text{ g} : 30 = \underline{\underline{114 \text{ g}}}$$

$$2. \quad \begin{array}{l} 100 \text{ ml} \text{ Milchschoppen} \hat{=} 1,5 \text{ mg Eisen} \\ \cdot 2 \left\{ \begin{array}{l} 2 \text{ dl} \quad \quad \quad \quad \quad \quad \quad \quad \hat{=} \underline{3 \text{ mg Eisen}} \end{array} \right. \cdot 2 \end{array}$$

$$\cdot 100 \left\{ \begin{array}{l} 100 \text{ ml} \text{ Muttermilch} \hat{=} 30 \mu\text{g Eisen} \\ \underline{10 \text{ l} \text{ Muttermilch}} \hat{=} \underline{3 \text{ mg Eisen}} \end{array} \right. \cdot 100$$

3. a.) 0,008 m e.) 60 g i.) 700 ml
b.) 20'000 dm f.) 10'000 kg j.) 200'000 cl
c.) 907 mm g.) 0,0505005 t k.) 2,02 l
d.) 10,101 cm h.) 10'000 mg l.) 3 hl

$$4. \quad \begin{array}{l} 1'000 \text{ km} \hat{=} 1 \text{ h} = 3'600 \text{ s} \\ \cdot 3600 \left\{ \begin{array}{l} \underline{\frac{5}{18} \text{ km}} \hat{=} 1 \text{ s} \end{array} \right. \cdot 3'600 \end{array}$$

$$\Rightarrow 300'000 \text{ km} : \frac{5}{18} \text{ km} = \underline{\underline{1'080'000 \times}}$$

5. a.) 0,02 b.) 0,005 c.) 0,0003
d.) 0,024 e.) 0,175 f.) 0,013
g.) 0,0465 h.) 0,005 i.) 0,006
j.) 0,025 k.) 0,002 l.) 0,00005

6. a.) 0,18 b.) 0,12 c.) 8,55
 d.) 3,75 e.) 0,11 f.) 1,95

7. a.) 5 b.) 20 c.) 50
 d.) 112 e.) 0,34 f.) 16,5

8. a.) 2'000 b.) 0,7
 c.) 0,0072 d.) 40
 e.) 2'600 f.) 4,4
 g.) 0,27 h.) 0,0016
 i.) 0,0024 j.) 0,024

9. a.) $\frac{2}{8} \cdot \frac{1}{5} = \frac{2}{5} = \underline{\underline{0,4}}$
 b.) $\frac{3}{4} \cdot \frac{1}{5} = \frac{3}{20} = \underline{\underline{0,15}}$

10. a.)

Fr.	kg
1,5	0,6
$\cdot 0,6 \left\{ \begin{array}{l} 1,5 \\ 2,5 \end{array} \right.$	$\left. \begin{array}{l} 0,6 \\ 1 \end{array} \right\} \cdot 0,6$
$\cdot 2,5 \left\{ \begin{array}{l} 6,25 \\ \underline{\underline{6,25}} \end{array} \right.$	$\left. \begin{array}{l} 2,5 \\ \underline{\underline{2,5}} \end{array} \right\} \cdot 2,5$

b.)

Fr.	kg
1,5	0,6
$\cdot 1,5 \left\{ \begin{array}{l} 1,5 \\ 1 \end{array} \right.$	$\left. \begin{array}{l} 0,6 \\ 0,4 \end{array} \right\} \cdot 1,5$
$\cdot 3,2 \left\{ \begin{array}{l} 3,2 \\ \underline{\underline{1,28}} \end{array} \right.$	$\left. \begin{array}{l} 1,28 \\ \underline{\underline{1,28}} \end{array} \right\} \cdot 3,2$

11. a.)

Euro	CHF
1	1,30
200	<u><u>260</u></u>

b.)

Euro	CHF
1	1,34
$\cdot 1,34 \left\{ \begin{array}{l} 1 \\ \dots \end{array} \right.$	$\left. \begin{array}{l} 1,34 \\ 1 \end{array} \right\} \cdot 1,34$
$\cdot 1,742 \left\{ \begin{array}{l} \dots \\ \underline{\underline{1'300}} \end{array} \right.$	$\left. \begin{array}{l} 1'742 \\ \underline{\underline{1'742}} \end{array} \right\} \cdot 1,742$

- 12.
- a.) 1'100'011
 - b.) 700'700'708'002'000'000
 - c.) 503'010'907'000'002'000'000
 - d.) 45'100'000'000'000'000'000 = $4,51 \cdot 10^{19}$
 - e.) 10'100'100'910
 - f.) 2'000'328'994
 - g.) 90'000'000'000'000'000'000'000 → 22 Nullen

13.

$$900 \stackrel{\wedge}{=} 18 \text{ cm}$$

$$1 \stackrel{\wedge}{=} 0,02 \text{ cm}$$

$$999'000 \stackrel{\wedge}{=} \underline{\underline{19'980 \text{ cm}}}$$

14.

$$(1 \text{ dm})^3 = 1 \text{ dm}^3 \stackrel{\wedge}{=} 4 \text{ kg}$$

$$(1 \text{ km})^3 = (10'000 \text{ dm})^3$$

$$= 1'000'000'000'000 \text{ dm}^3 \stackrel{\wedge}{=} \underline{\underline{4'000'000'000'000 \text{ kg}}}$$

15.

$$(10^4 + 10^8) : 2 = (10'000 + 100'000'000) : 2$$

$$= 100'010'000 : 2$$

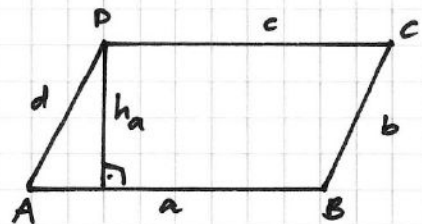
$$= \underline{\underline{50'005'000}}$$

16.

$$A = a \cdot h_a \quad \leadsto \quad a = \frac{A}{h_a}$$

$$= \frac{0,4 \text{ m}^2}{0,8 \text{ m}}$$

$$= \underline{\underline{0,5 \text{ m}}}$$



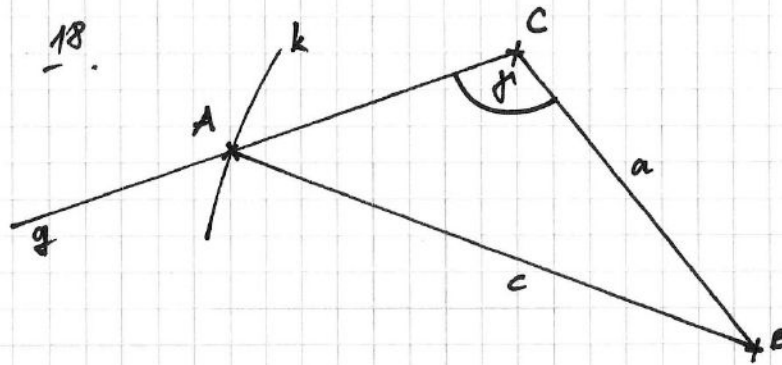
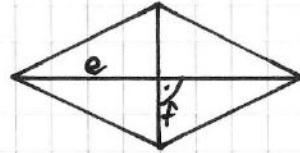
$$\Rightarrow u = 2 \cdot (a + b) = 2 \cdot (0,5 \text{ m} + 1,5 \text{ m}) = \underline{\underline{4 \text{ m}}}$$

17. $u_{\text{Rechteck}} = 2 \cdot (a + b) \leadsto b = \frac{u}{2} - a$
 $= \frac{100\text{cm}}{2} - 40\text{cm}$
 $= \underline{10\text{cm}}$

$\Rightarrow A_{\text{Rechteck}} = a \cdot b = 40\text{cm} \cdot 10\text{cm} = \underline{400\text{cm}^2}$

$A_{\text{Rhombus}} = \frac{e \cdot f}{2}$

$\leadsto f = \frac{2 \cdot A}{e} = \frac{2 \cdot 400\text{cm}^2}{50\text{cm}} = \underline{16\text{cm}}$



Konstruktionsbericht:

1. $a = \overline{BC}$
2. $\perp g$ in C an $a \rightarrow g$
3. $k(B, c) \cap g = \{A\}$

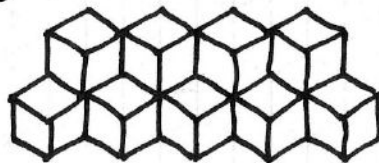
19. a.) 405 m^2

b.) $0,0285\text{ ha}$

c.) 4 a

d.) $0,0025\text{ km}^2$

20. a.) ③



b.) $4 \quad | \quad 7 \quad | \quad 10 \quad | \quad 13 \quad | \quad 3x + 1$

c.) $18 \quad | \quad 30 \quad | \quad 42 \quad | \quad 54 \quad | \quad 12x + 6$

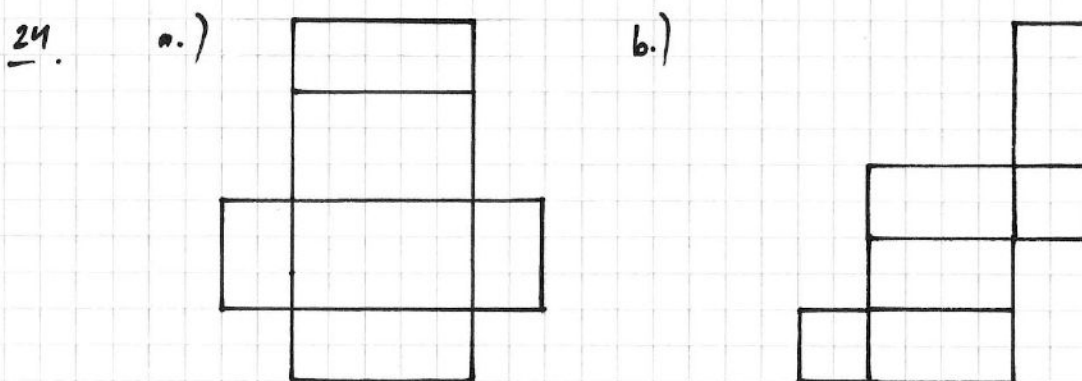
d.) $6 \quad | \quad 12 \quad | \quad 18 \quad | \quad 24 \quad | \quad 6x$

- 21.
- | | | | |
|-----|-----|-----|----|
| a.) | 31 | e.) | 0 |
| b.) | 3 | f.) | 2 |
| c.) | 7 | g.) | 62 |
| d.) | 302 | h.) | 20 |

- 22.
- | | | | |
|-----|-----|-----|-----|
| a.) | 160 | g.) | 110 |
| b.) | 32 | h.) | 9 |
| c.) | 2,4 | i.) | 4 |
| d.) | 120 | j.) | 5 |
| e.) | 35 | k.) | 20 |
| f.) | 0 | l.) | 30 |

23.

$$\begin{aligned}
 0 &= 2 \cdot (a \cdot b + a \cdot c + b \cdot c) \\
 &= 2 \cdot (2 \text{ dm} \cdot 3 \text{ dm} + 2 \text{ dm} \cdot 5 \text{ dm} + 3 \text{ dm} \cdot 5 \text{ dm}) \\
 &= 2 \cdot (6 \text{ dm}^2 + 10 \text{ dm}^2 + 15 \text{ dm}^2) = \underline{\underline{62 \text{ dm}^2}}
 \end{aligned}$$



25.

$$\begin{aligned}
 (0,5 \text{ m})^3 &= (500 \text{ mm})^3 = \underline{\underline{125'000'000 \text{ mm}^3}} \\
 \Rightarrow 125'000'000 \text{ mm}^3 : 1 \text{ mm}^3 &= \underline{\underline{125'000'000 \times}}
 \end{aligned}$$

26.

3 rote Flächen:	<u>8</u>	(Ecken)
2 rote Flächen:	$4 \cdot (8 + 3 + 6) =$	
	<u>68</u>	(Kanteninners)
1 rote Fläche:	$2 \cdot (8 \cdot 3 + 8 \cdot 6 + 3 \cdot 6) =$	
	$2 \cdot (24 + 48 + 18) =$	
	<u>180</u>	(Flächeninners)
keine rote Fläche:	$8 \cdot 3 \cdot 6 =$	
	<u>144</u>	(Würfelinners)

⇒ Kontrolle: $8 + 68 + 180 + 144 = \underline{400}$
 $10 \cdot 5 \cdot 8 = \underline{400}$

27.

$3 \cdot x = 4 \cdot y + 8 \quad :3$	$x \mid 4 \quad 8 \quad 12 \quad 16 \quad 20$
$x = \frac{4 \cdot y + 8}{3}$	$y \mid 1 \quad 4 \quad 7 \quad 10 \quad 13$

28.

$2 \cdot x = 3 \cdot y \quad :2$	$3 \cdot x = y + 7$
<u>$x = 1,5 \cdot y$</u>	$\rightsquigarrow 3 \cdot 1,5 \cdot y = y + 7$
	$4,5 \cdot y = y + 7 \quad -y$
	$3,5 \cdot y = 7 \quad :3,5$
<u><u>$x = 3$</u></u>	$\longleftarrow \underline{\underline{y = 2}}$

29. a.)

$4x - 15 = 8x - 5 \quad -4x$	
$-15 = 4x - 5 \quad +5$	
$-10 = 4x \quad :4$	
<u><u>$-2,5 = x$</u></u>	<u><u>$\mathbb{L} = \{-2,5\}$</u></u>

$$\begin{array}{rcl}
 \text{b.)} & x - 6 = \frac{x}{5} + 2 & | \cdot 5 \\
 & 5x - 30 = x + 10 & | -x \\
 & 4x - 30 = 10 & | + 30 \\
 & 4x = 40 & | : 4 \\
 & \underline{x = 10} & \mathbb{L} = \{ \underline{10} \}
 \end{array}$$

$$\begin{array}{rcl}
 \text{c.)} & 12 - 9x = 6x + 2 & | + 9x \\
 & 12 = 15x + 2 & | - 2 \\
 & 10 = 15x & | : 15 \\
 & \frac{10}{15} = x & \\
 & \underline{x = \frac{2}{3}} & \mathbb{L} = \{ \underline{\frac{2}{3}} \}
 \end{array}$$

$$\begin{array}{rcl}
 \text{d.)} & 0,1 - 2x = 0,3 & | + 2x \\
 & 0,1 = 2x + 0,3 & | - 0,3 \\
 & -0,2 = 2x & | : 2 \\
 & \underline{-0,1 = x} & \mathbb{L} = \{ \underline{-0,1} \}
 \end{array}$$

30.

$$\begin{array}{l}
 \text{Grossmutter : } x \\
 \text{Mutter : } \frac{x}{2} \\
 \text{Tochter : } \frac{x}{2} - 24
 \end{array}$$

$$\begin{array}{rcl}
 \Rightarrow x + \frac{x}{2} + \frac{x}{2} - 24 = 96 & & \\
 2x - 24 = 96 & | + 24 & \\
 2x = 120 & | : 2 & \\
 \underline{x = 60} & &
 \end{array}$$

⇒ Grossmutter: 60 Jahre, Mutter: 30 Jahre, Tochter: 6 Jahre.

31.

a.) x^{13}

b.) x^{12}

32.

a.) $x = 6$

b.) $x = 7$

33.

$x = 4;5$

34.

$\cdot 1,25 \left\{ \begin{array}{l} 24 \text{ Tiere} \hat{=} 20 \text{ Wochen} \\ 30 \text{ Tiere} \hat{=} \underline{\underline{16 \text{ Wochen}}} \end{array} \right. \cdot 1,25$

35.

$\cdot 0,75 \left\{ \begin{array}{l} 648 \text{ km} \hat{=} 0,75 \text{ h} \\ \underline{864 \text{ km}} \hat{=} 1 \text{ h} \end{array} \right. \cdot 0,75$

\Rightarrow Geschwindigkeit: $864 \frac{\text{km}}{\text{h}}$

36.

$(50 \text{ cm})^3 = 125'000 \text{ cm}^3 \hat{=} 50 \text{ kg}$
 $(80 \text{ cm})^3 = 512'000 \text{ cm}^3 \hat{=} \underline{\underline{204,8 \text{ kg}}}$

37.

	Weiss	Orange	Grün	Blau
Gem. Bruch	$\frac{1}{4}$	$\frac{3}{10}$	$\frac{1}{4}$	$\frac{1}{5}$
Dezimalbruch	0,25	0,3	0,25	0,2
Prozent (%)	25	30	25	20

38

Gekürzter gem. Bruch	Dezimalbruch	Prozent (%)
$\frac{2}{5}$	0,4	40
$\frac{1}{25}$	0,04	4
$\frac{1}{4}$	0,25	25
$\frac{2}{3}$	$0,\bar{6}$	$66,\bar{6}$
$\frac{5}{8}$	0,625	62,5
$\frac{9}{40}$	0,225	22,5

39

				c.)	
a.)					
			b.)		

40

Wörter	abs. a rel.		abs. e rel.		abs. n rel.	
Rennraeder	1	$\frac{1}{10}$	3	$\frac{3}{10}$	2	$\frac{1}{5}$

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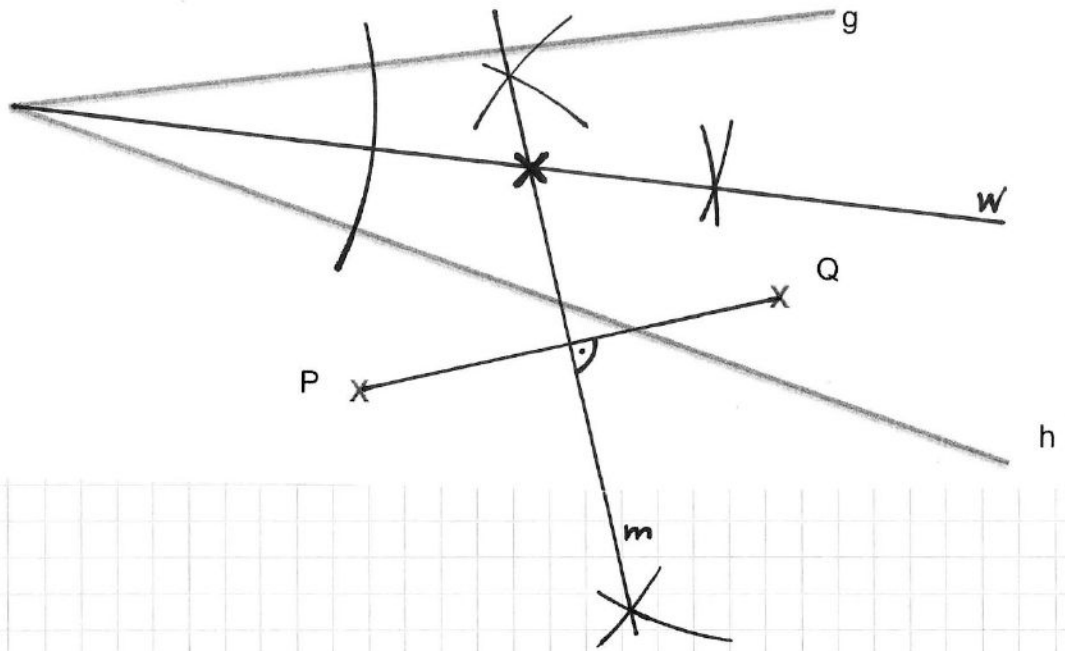
70 Fr. $\hat{=}$ 100 %

14 Fr. $\hat{=}$ 20 %

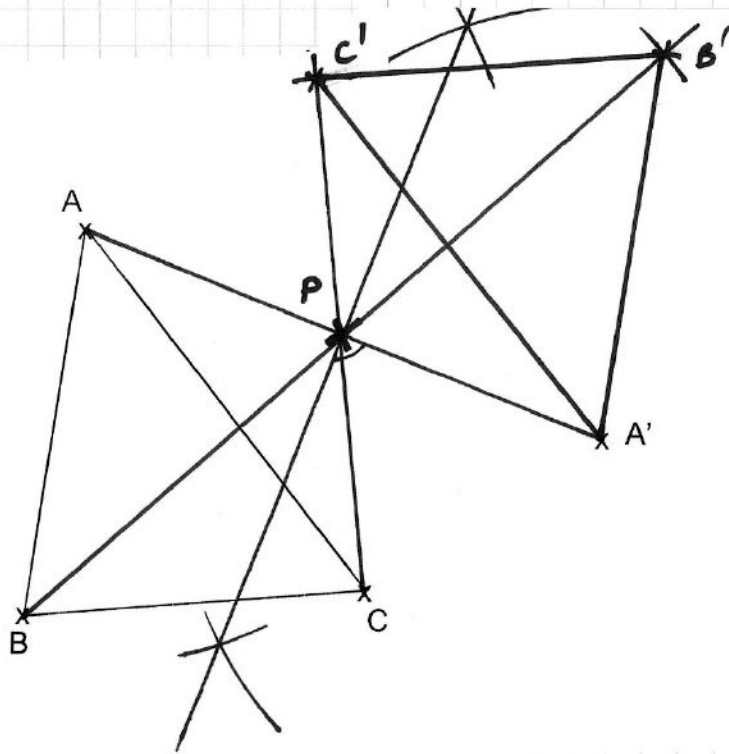
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Inhalt	200 ml	60 ml	150 ml	1 l	250ml	30ml	225 ml	0,5ml
Anteil in %	80 %	24 %	60 %	400 %	100 %	12 %	90 %	0.2 %

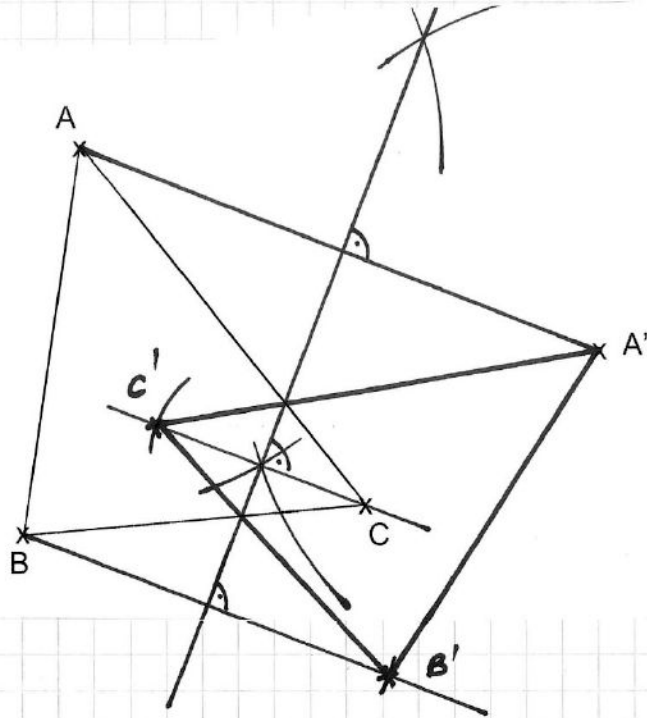
43.



44.



45.



46.

a.) $4x + 4y$

f.) $-2x - 2y$

b.) $16x$

g.) $-8x - 30y$

c.) $4x - 10y$

h.) $16x - 20y$

d.) $-2x - 2y$

i.) $-3x + 17y$

e.) $13x + 13y$

j.) $15x - 12y$

47.

a.) $\frac{7}{24} + \frac{7}{32} = \frac{28}{96} + \frac{21}{96} = \frac{49}{96}$

b.) $\frac{3}{20} - \frac{2}{25} = \frac{15}{100} - \frac{8}{100} = \frac{7}{100}$

c.) $\frac{85^5}{819} \cdot \frac{63^7}{342} = \frac{35}{18}$

d.) $\frac{8a^8a^2}{256b^5} \cdot \frac{36b^1}{9^8a^2} \cdot \frac{315^2}{16a^1b^1} = \frac{9}{5a^3b^6}$

48.

a.) $20x^2 + 24xy - 28xz$

b.) $2x^2yz - 14xy^2z + 6xyz^2$

c.) $6x - 8y - 20x + 15y - 2x + 4y = \underline{\underline{-16x + 11y}}$

d.) $8x + 12y - [4x - 2x + 4y] =$
 $8x + 12y - 4x + 2x - 4y = \underline{\underline{6x + 8y}}$

e.) $5x^2 + x - 25x - 5 = \underline{\underline{5x^2 - 24x - 5}}$

f.) $(2x - 4y) \cdot (2x - 4y) = 4x^2 - 8xy - 8xy + 16y^2 =$
 $4x^2 - 16xy + 16y^2$
