Válec

7) $d = 18\ cm$

$r = \frac{3}{2} \cdot 18 = 27\ cm$

$V = ?\ cm^3$

$V = \pi \cdot r^2 \cdot r$

$V = \cancel{3,14}\ \frac{22}{7} \cdot 9^2 \cdot 27$

$V = \frac{22}{7} \cdot 81 \cdot 27 =$

$V = 6\,873,43\ cm^3 \doteq \underline{6,87\ l}$

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8) $V = 3818,24\ l$

$d = 1,6\ m = 16\ dm$

$S = ?\ dm^2$

$r = ?\ dm$

$r = 8\ cm$

$V = \pi \cdot r^2 \cdot r$

$3818,24 = 3,14 \cdot 64 \cdot r$

$\underline{19,625\ dm = r}$

$S_{p} = \pi \cdot r^2$

$\underline{S_p = 200,96\ dm^2}$

$o = \pi \cdot d$

$o = 3,14 \cdot 16$

$\underline{o = 50,24}$

$S_{pl} = o \cdot r$

$S_{pl} = 50,24 \cdot 19,625$

$S_{pl} = 985,96$

$S = S_{pl} + 2 \cdot S_p$

$S = 985,96 + 2 \cdot 200,96$

$S = 985,96 + 401,92$

$S = 1\,387,58\ dm^2 \doteq 13,88\ m^2$

$1\ m^2 \ldots\ldots 0,6\ kg$

$13,88\ m^2 \ldots\ldots x\ kg$

$13,88 = \frac{x}{0,6}$

$\underline{8,328\ kg = x}$

Budeme potřebovat přibližně 8,4 kg barvy.

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9) $d = 8\ cm$

$r = 24\ cm$

$r_p = \frac{1}{3} \cdot 24 = 16\ cm$

$V = ?\ cm^3$

$V = \pi \cdot a^2 \cdot r$

$V = 3,14 \cdot 16 \cdot 16$

$V = 803,84\ cm^3 = \underline{0,8\ l}$

1 nádoba .... 0,8 l

20 nádob .... $20 \cdot 0,8 =$ ~~16 l~~ 16 l

10) $d = 9\,cm$

$r = 11\,cm$

$r = 4{,}5\,cm$

$V = ?\ cm^3$

$V = \pi \cdot r^2 \cdot r$

$V = 3{,}14 \cdot 4{,}5^2 \cdot 11$

$V = 699{,}435\ cm^3 \doteq \underline{0{,}7\,l}$

1 konek ..... 0,7 l

x konků ..... 2 l

$x \doteq 3$

Bude muset vypít alespoň 3 koníčky

11) $S_{pl} = 9\frac{21}{50}\,dm^2 = 9{,}42$

$r = \frac{3}{5}\,dm = 0{,}6$

$r = ?\ dm$

$S_{pl} = o \cdot r$

$\frac{9{,}42}{\frac{132}{35}} = r$

$\frac{471}{50} \cdot \frac{35}{132} = r$

$2{,}5\,dm = r$

$o = \pi \cdot d$

$o = \frac{22}{7} \cdot \frac{6}{5} = 3{,}14 \cdot 1{,}2$

$o = \frac{132}{35}\,dm = 3{,}76\,dm$

12) $d_1 = 1{,}5\,cm$

$r_1 = 8\,cm$

$V_1 = ?\ cm^3$

$V = \pi \cdot r^2 \cdot r$

$V = 3{,}14 \cdot 2{,}25 \cdot 8$

$V = 56{,}52\,cm^3$

$V_1 = V_2 = 56{,}52$

$r_2 = 2{,}5\,cm$

$r_2 = ?\ cm$

$V = \pi \cdot r^2 \cdot r$

$56{,}52 = 3{,}14 \cdot 2{,}5^2 \cdot r_2$

$2{,}88\,cm \doteq r_2$

1) $F = 14{,}5\ kN = 14500\ N$

$v = 10\ km/h = 2{,}78\ m/s$

$P = F \cdot v$

$P = 14500 \cdot 2{,}78$

$P = 40310\ W \doteq 40\ kW$

2) $P = 1\ kW = 1000\ W$

$t = 1{,}5\ h = 90\ min = 5400\ s$

$P = \frac{W}{t} \Rightarrow W = P \cdot t$

$W = 1000 \cdot 5400$

$W = 5\,400\,000\ J = 5{,}4\ MJ$

3) $m = 93\ kg \Rightarrow F_g = 930\ N$

$s = 16\ m$

$t = 18\ s$

1 možnosť

$P = F \cdot v$

$P = F \cdot \frac{s}{t}$

$P = 930 \cdot \frac{16}{18}$

$P = 827\ W$

2 možnosť

$W = F \cdot s$

$W = 930 \cdot 16$

$W = 14880\ J$

$P = \frac{W}{t}$

$P = \frac{14880}{18}$

$P = 827\ W$

4) $V = 50\,m^3 \Rightarrow m = 50\,000\,kg \Rightarrow F_g = 500\,000\,N$

$s = 15\,m$

$t = 10\,min = 600\,s$

$W = F \cdot s$

$W = 500\,000 \cdot 15$

$W = 7\,500\,000\,J$

$P = \frac{W}{t}$

$P = \frac{7\,500\,000}{600}$

$P = 12\,500\,W = \underline{12{,}5\,kW}$

5) $P = 27\,kW = 27\,000\,W$

$t = 3\,hod = 180\,min = 10\,800\,s$

$P = \frac{W}{t} \Rightarrow W = P \cdot t$

$W = 27\,000 \cdot 10\,800$

$W = 291\,600\,000 = \underline{291{,}6\,MJ}$

6) $m = 0{,}5\,t = 500\,kg \Rightarrow F_g = 5000\,N$

$s = 12\,m$

$t = 0{,}5\,min = 30\,s$

$W = F \cdot s$

$W = 5000 \cdot 12$

$W = 60000\,J$

$P = \frac{W}{t}$

$P = \frac{60000}{30}$

$P = 2000\,W = 2kW$

Rozlož na součin (vytýkáním nebo pomocí vzorce)

$16m^2 - 25n^2 = (4m - 5n)(4m + 5n)$

$x^2 - xy = x(x - y)$

$5k^2 - 30k + 25 = 5(k^2 - 6k + 5)$

$5c^2 + 4c = c(5c + 4)$

$x^2(x - y) + 3y^2(y - x) = (x - y)(x^2 - 3y^2)$

$1 - 36a^2 = (1 - 6a)(1 + 6a)$

$3x^2 - 9x = 3x(x - 3)$

$8x^2 - 12x - 12x + 18 = 4x(2x - 3) - 6(2x - 3) = (2x - 3)(4x - 6)$

$a(k + 1) - b(-1 - k) = (k + 1)(a + b)$

$4a + 8 - 12b = 4(a + 2 - 3b)$

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

$3y(x - y) + 2x(x - y) = (x - y)(3y + 2x)$

$j^2 - 36 = (j - 6)(j + 6)$

$4a^2 - 49 = (2a - 7)(2a + 7)$

$a^2x + abx + ax^2 + bx^2 = ax(a + b) + x^2(a + b) = (a + b)(ax + x^2) =$
$= (a + b) \times (a + x) =$

Uprav výrazy:

$(x + 3y)(x - 3y) = x^2 - 9y^2$

$4x^3 + a^2 + 4x^3 - 6a^2 = 8x^3 - 5a^2$

$-3 \cdot 5b - (3 - 5b) = -15b - 3 + 5b = -10b - 3$

$(4a + 1)(4a - 1) = 16a^2 - 1$

$4 \cdot (2b + 3a - 2) - 2(a + 4b) = 8b + 12a - 8 - 2a - 8b = 10a - 8$

$7b - 4(b + 2) = 7b - 4b - 8 = 3b - 8$

$3a - 2(a - 1) = 3a - 2a + 2 = a + 2$

$2(2x + 1) - 6x = 4x + 2 - 6x = -2x + 2 = 2(1 - x)$

$2(x + 2) + 3(x - 1) = 2x + 4 + 3x - 3 = 5x + 1$

$5a(a^2 + 5a) + a^3 = 5a^3 + 25a^2 + a^3 = 6a^3 + 25a^2$

$7 - (3 - 2c) - 1 + (3c + 5) = 7 - 3 + 2c - 1 + 3c + 5 = 5c + 8$

Rozklad na součin II.

$a^2 - 25b^2 = (a-5b)(a+5b)$

$a^2 + 5ab = a(a+5b)$

$x^2 - 1 = (x-1)(x+1)$

$9b^2 - 36b = 9b(b-4)$

$16x^2 - 1 = (4x-1)(4x+1)$

$u^2v^2 - 64 = (uv-8)(uv+8)$

$9a^2 - 18a^2b^2 = 9a^2(1-2b^2)$

$9x + 27 - 18x^2 = 9(x+3-2x^2)$

$16c^2 - 25d^2 = (4c-5d)(4c+5d)$

$2a^2 + 8a = 2a(a+4)$

$a - 1 + 3a^2 - 3a = (a-1) + 3a(a-1) = (a-1)(1+3a)$

$49x^2 - 100 = (7x-10)(7x+10)$

$49 - 9y^2 = (7-3y)(7+3y)$

$7(x^2 - 2y) - 6x(2y - x^2) = (x^2-2y)(7+6x)$

$xy^3 - 3xy + 9y^2 - 3a = xy(y^2-3) + a(y^2-3) = (y^2-3)(xy+a)$

Upravte výrazy:

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

$3 - (2x-1) = 3 - 2x + 1 = 4 - 2x = \underline{2(2-x)}$

$(2-3a)(2+3a) = 4 - 9a^2$

$5(w-2) - 3(v^3w^7 + 4) = 5w - 10 - 3v^3w^7 - 12 = \underline{5w - 22 - 3v^3w^7}$

$x^2 - (3-x^2) + (7-x^2) = x^2 - 3 + x^2 + 7 - x^2 = \underline{x^2 + 4}$

$6(5a+2b) + 3(7a-b) = 30a + 12b + 21a - 3b = \underline{51a + 9b}$

$-3a \cdot (-4c) = 12ac$

$2 - w - 2(3-w) = 2 - w - 6 + 2w = \underline{-4 + w}$

$6a(a+b) + 3ab(-a+4) = 6a^2 + 6ab - 3a^2b + 12ab = \underline{6a^2 - 3a^2b + 18ab}$

$3 - (2x-1) = 3 - 2x + 1 = 4 - 2x = \underline{2(2-x)}$

$2y - (-y+4) = 2y + y - 4 = \underline{3y - 4}$

$(2d-1)(2d+1) = 4d^2 - 1$