

2005 - Matematika - porovnávací test (Minimum pro 9. třídu)

1) $4000 + 4500 + 3000 + 2000 + 2500 = 16000,-$

$$\begin{array}{r} \uparrow 100\% \dots 16000,- \uparrow \\ X\% \dots 4000,- \end{array}$$

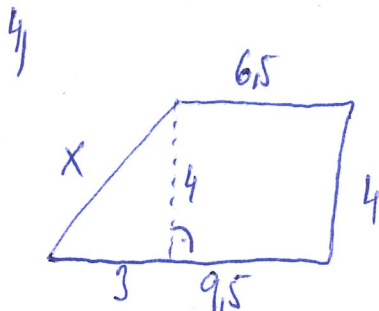
$X = 25\% \Rightarrow \textcircled{D}$

2) $40\% \text{ z } 16000 = 0,4 \cdot 16000 = 6400 \dots \text{201}$
 $14000 - 10300 = 4200 \dots \text{202}$

$4200 - 6400 = -2200 \Rightarrow \textcircled{A}$

3)
$$\frac{(x-3) \cdot 6}{3} + 5 = \frac{6x-18}{3} + 5 = \frac{6x-18+15}{3} = \frac{6x-3}{3} = \frac{3(2x-1)}{3} =$$

 $= \boxed{2x-1}$ - Liche' cislo $\Rightarrow \textcircled{C}$



$x^2 = 4^2 + 3^2 = 25$

$x = 5m$

$O = 5 + 9,5 + 4 + 6,5 = 25m$

$4\% \text{ z } 25 = 0,04 \cdot 25 = 1m$

$25 + 1 = \boxed{26m} \Rightarrow \textcircled{B}$

5) $m(3; 4; 6; 8) = 24 = 2 \cdot 2 \cdot 2 \cdot 3$

$3 = 3 \cdot 1$

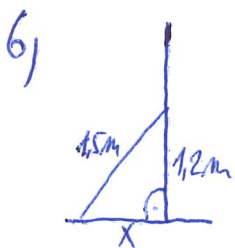
$4 = 2 \cdot 2$

$6 = 2 \cdot 3$

$8 = 2 \cdot 2 \cdot 2$

Jaksi' nasebly - 48, 72, ... nevyhovuji'

$\textcircled{24} \Rightarrow \textcircled{B}$



$x^2 = 1,5^2 - 1,2^2$

$x^2 = 2,25 - 1,44 = 0,81$

$x = 0,9m = 90cm \Rightarrow \textcircled{A}$

4) $x - 6 - 2(1 - 4x) = 3(x + 2) - 2(3x - 2)$

$x - 6 - 2 + 8x = 3x + 6 - 6x + 4$

$9x - 8 = -3x + 10$

$12x = 18$

$x = 1,5 = \frac{3}{2} \Rightarrow \textcircled{B}$

8) $m(9; 8; 6; 12) = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 = \boxed{72} \Rightarrow \textcircled{C}$

$\begin{matrix} \nearrow 2 \cdot 2 \cdot 3 \\ \downarrow 3 \cdot 3 \quad \downarrow 2 \cdot 2 \quad \downarrow 2 \cdot 3 \end{matrix}$

9)
$$\frac{2\frac{3}{4} - \frac{5}{4} + \frac{1}{2}}{\frac{1}{3} + 1\frac{1}{6} - \frac{21}{18}} = \frac{\frac{9}{4} - \frac{5}{4} + \frac{1}{2}}{\frac{1}{3} + \frac{1}{6} - \frac{21}{18}} = \frac{\frac{3}{2}}{\frac{1}{3}} = \frac{9}{2} \Rightarrow \textcircled{D}$$

10)
$$\frac{\begin{matrix} \uparrow \frac{3}{4} \text{ del} \dots 2 \text{ minut} \\ \uparrow 3 \text{ del} \dots x \text{ minut} \end{matrix}}{X = \frac{3 \cdot 20}{\frac{3}{4}} = \frac{60}{\frac{3}{4}} = 80 \text{ minut} = \frac{4}{3} \text{ hodiny} \Rightarrow \textcircled{B}}$$

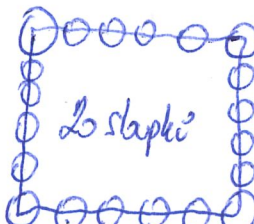
11) $V = 2 \cdot 3 \cdot 0,5 = 3 \text{ m}^3 = 3000 \text{ l}$
 $X = 3000 : 20 = 150 \text{ minut} = 2 \text{ h } 30 \text{ minut} \Rightarrow \textcircled{D}$

12) $4(x-6) + 2(12-2x) = 2 - 3(x-1)$
 $4x - 24 + 24 - 4x = 2 - 3x + 3$
 $0 = 5 - 3x$
 $3x = 5$
 $\boxed{X = \frac{5}{3}} \Rightarrow \textcircled{A}$

13)
$$\frac{\begin{matrix} \uparrow 40 \dots 5 \text{ sek}^2 \text{ (vetyri)} \\ \uparrow X \dots 4 \text{ roby} \text{ (mensi)} \end{matrix}}{\frac{X}{40} = \frac{5}{4} \Rightarrow X = \frac{40 \cdot 5}{4} = 50 \text{ x se okos mensi kob} \Rightarrow \textcircled{B}}$$

14) $2 \left[\sqrt{0,04} - \left(\sqrt{4} - \sqrt{1,44} \right)^2 \right] + 0,8^2 \cdot 3 = 2 \left[0,2 - 0,64 \right] + 0,64 \cdot 3 = -0,88 + 1,92 = \boxed{1,04} \Rightarrow \textcircled{B}$

15) $S_{\text{kar}} = 100 \text{ m}^2$ - obsah čtverce o straně 10 m
 $\sigma = 4 \cdot 10 = 40 \text{ m}$
 $X = 40 : 2 = \boxed{20} \Rightarrow \textcircled{C}$



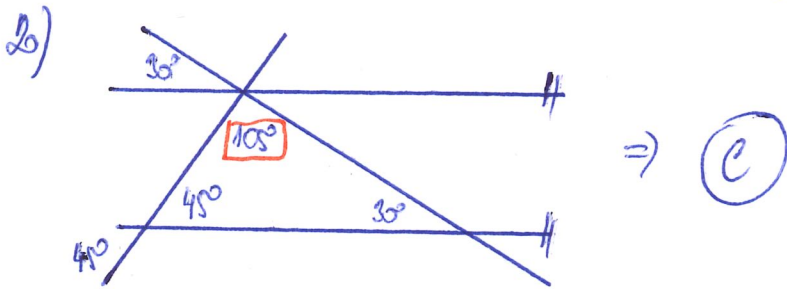
$$16) \underbrace{2,2 \cdot 10^3}_{2200} \cdot \underbrace{0,15 \cdot 10^6}_{150000} = 2200 \cdot 150000 = 330000000 = 3,3 \cdot 10^8 \Rightarrow \textcircled{B}$$

$$17) \frac{4x^2 - 4y^2}{y^2 - 2xy + x^2} \cdot \frac{3x + 3y}{12x + 12y} = \frac{4(x^2 - y^2)}{(y-x)^2} \cdot \frac{3(x+y)}{12(x+y)} = \frac{4(x-y)(x+y)}{(y-x)^2} \cdot \frac{3(x+y)}{12(x+y)} =$$

$$= \frac{\cancel{(x-y)}(x+y)}{\ominus(y-x)(y-x)} = -\frac{(x+y)}{(y-x)} = \frac{x+y}{-(y-x)} = \frac{x+y}{x-y} \Rightarrow \textcircled{D}$$

$$18) \frac{\sqrt{\frac{a^2}{25}} - \frac{5}{a}}{\frac{a+10}{5} + \frac{5}{a}} = \frac{\sqrt{\frac{10^2}{25}} - \frac{5}{10}}{\frac{10+10}{5} + \frac{5}{10}} = \frac{\sqrt{4} - \frac{1}{2}}{\frac{20}{5} + \frac{5}{10}} = \frac{2 - \frac{1}{2}}{4 + \frac{1}{2}} = \frac{\frac{3}{2}}{\frac{9}{2}} = \frac{3}{9} = \frac{1}{3} \Rightarrow \textcircled{C}$$

$$19) 2(4-2) : \frac{1}{3}(4+2) = 2 \cdot 2 : \frac{6}{3} = 4 : 2 = 2 \Rightarrow \textcircled{B}$$



$$21) \left. \begin{array}{l} \bar{c} = 326 \text{ l} \\ \pi - \frac{1}{2} \pi \bar{c} = 50 \text{ l} \\ \bar{z} = 0,4 \cdot 10^4 \text{ dm}^3 = 4000 \text{ l} \\ \bar{z} = \frac{3}{4} \text{ m}^3 = 450 \text{ dm}^3 = 450 \text{ l} \end{array} \right\}$$

$$M, \bar{c}, \bar{z}, \bar{z} \Rightarrow \textcircled{B}$$

$$50 \text{ l} < 326 \text{ l} < 450 \text{ l} < 4000 \text{ l}$$

$$22) 22 * 87412 \Rightarrow 1; 4; 7 \Rightarrow \textcircled{A}$$

$$2+2+8+7+4+1+2 = 26 \Rightarrow \text{ciferný súčet deliteľný 3 je 27, 30, 33}$$

$$23) S = \pi r^2$$

$$\left. \begin{array}{l} r_1 = 2 \Rightarrow S_1 = \pi \cdot 2^2 = 4\pi \\ r_2 = 3 \Rightarrow S_2 = \pi \cdot 3^2 = 9\pi \end{array} \right\} S_1 : S_2 = 4\pi : 9\pi = 4 : 9 \Rightarrow \textcircled{D}$$

obecné: $r_1 : r_2 = 2 : 3$
 $S_1 : S_2 = 2^2 : 3^2 = 4 : 9$

$$24) (2,1 + 12) - 2,1 \cdot 1,2 = 3,3 - 2,52 = 0,78 \Rightarrow \textcircled{D}$$

$$\begin{array}{r} 21 \\ 12 \\ \hline 42 \\ 21 \\ \hline 252 \\ 1 \end{array}$$

$$25) \begin{array}{ccc} \uparrow & 100\% & \dots & 550,- & \uparrow \\ & 90\% & \dots & X & \uparrow \end{array}$$

$$X = \frac{90 \cdot 550}{100} = \textcircled{495,-}$$

Pro Novem roce :

$$\begin{array}{ccc} \uparrow & 100\% & \dots & 495 & \uparrow \\ & 89\% & \dots & X & \uparrow \end{array}$$

$$X = \frac{89 \cdot 495}{100} = \frac{495 \cdot 89}{100} = 495 \cdot 0,89 =$$

$$= 396,- \text{ Kč} \Rightarrow \textcircled{C}$$

$$\begin{array}{r} 49,5 \\ - 8 \\ \hline 396,0 \\ 1 \end{array}$$