

9. třída - 26.4.2011 (D)

$$1) \left. \begin{array}{l} \sqrt{0,04} = 0,2 \\ 0,04^2 = 0,0016 \end{array} \right\} 0,2 : 0,0016 = \frac{2000}{40} : 16 = 125x \Rightarrow (D)$$

$$2) \begin{array}{r} \frac{x}{2} - \frac{y}{3} = 4 \quad | \cdot 6 \\ \frac{x}{4} + \frac{y}{6} = 1 \quad | \cdot 12 \\ \hline 3x - 2y = 24 \\ 3x + 2y = 12 \quad | (+) \\ \hline 6x = 36 \\ x = 6 \end{array} \Rightarrow y = \frac{12 - 3 \cdot 6}{2} = -3 \quad [6; -3] \Rightarrow (C)$$

$$3) 28 - 16 = 12; \quad 28 + 12 = 40 - \text{celkem} \quad \begin{array}{r} \uparrow 100\% \dots 40 \uparrow \\ x\% \dots 12 \uparrow \\ \hline x = \frac{12 \cdot 100}{40} = 30\% \Rightarrow (A) \end{array}$$

4) Poloměr větší kruhu r je roven 4 poloměrům menší kruhu (r_1) $\rightarrow r = 4r_1$

$$\begin{array}{l} \downarrow \\ S_1 = \pi r^2 = \pi \cdot (4r_1)^2 = 16\pi r_1^2 \\ \downarrow \\ S_2 = 4\pi r_1^2 \end{array}$$

počet menších kruhů a jejich celkový obsah $\rightarrow S_2 = 4\pi r_1^2$

$$\begin{array}{r} 16\pi r_1^2 \dots 100\% \\ 4\pi r_1^2 \dots x\% \\ \hline x = 25\% \Rightarrow (C) \end{array}$$

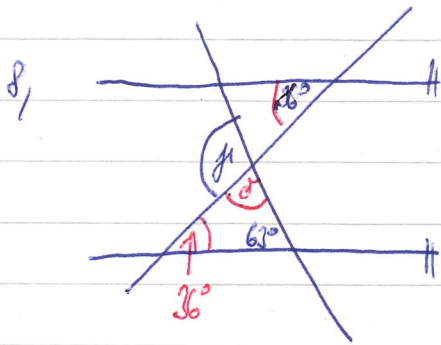
5) čas 1. běžece $\dots 8:59:33 - 8:42:53 = 58:93 - 42:53 = [16:40] = [1000 \text{ sekund}]$

$$\begin{array}{r} \uparrow 1000s = 16 \text{ min } 40s \dots 3 \text{ m/s} \\ x s \dots 4 \text{ m/s} \downarrow \\ \hline \frac{x}{1000} = \frac{3}{4} \Rightarrow x = \frac{3000}{4} = 750s = [12 \text{ min } 30s] \end{array}$$

2. běžec doběhl $\vee 8:42:53 + 0:12:30 = [8:55:23] \Rightarrow (A)$

6) $\alpha \dots 35\% \text{ z } 300 = 0,35 \cdot 300 = 105 \text{ €}$
 $\beta \dots 55\% \text{ z } 200 = 0,55 \cdot 200 = 110 \text{ €}$
 $\pi \dots 0\% \text{ z } 100 \Rightarrow 0 \text{ €}$
 $215 \text{ €} \Rightarrow \text{(A)}$

7) $48\text{hl} + 2,52\text{hl} + 5500\text{cm}^3 + 5\text{m}^3 = \underbrace{0,48\text{hl} + 2,52\text{hl}}_{3\text{hl}} + 0,055\text{hl} + 50\text{hl} = 53,055\text{hl} \Rightarrow \text{(B)}$



$\delta = 180^\circ - 63^\circ - 36^\circ = 180^\circ - 99^\circ = 81^\circ$
 $\pi = 180^\circ - 81^\circ = 99^\circ \Rightarrow \text{(C)}$

9) $\frac{2x-3}{2} - \frac{4x+2}{3} = -2 \quad | \cdot 6$

$3(2x-3) - 2(4x+2) = -12$

$6x-9-8x-4 = -12$

$-2x-13 = -12$

$-2x = 1 \Rightarrow \boxed{x = -\frac{1}{2}} \Rightarrow \text{(B)}$

10) $(3 - \frac{3a}{2})^2 = 9 - 2 \cdot 3 \cdot \frac{3a}{2} + \frac{9a^2}{4} = 9 - 9a + \frac{9a^2}{4} = \frac{9a^2}{4} - 9a + 9 \Rightarrow \text{(A)}$

11) A \rightarrow má být 360°

B \rightarrow ANO

C \rightarrow nepro v obdélníku a v kosodélníku

D \rightarrow NEJISTÁ (to má čtverec a obdélník)

(B)

12) Největší úhel: $42^\circ 18' + 32^\circ 21' = \boxed{74^\circ 39'}$

Třetí úhel (prospěch): $180^\circ - (42^\circ 18' + 74^\circ 39') = 149^\circ 60' - 116^\circ 57' = \boxed{63^\circ 3'}$

$74^\circ 39' - 63^\circ 3' = 11^\circ 36' \Rightarrow \text{(D)}$

$$13) \begin{array}{l} \uparrow 5000,- \dots 100\% \uparrow \\ \uparrow 4250,- \dots x\% \uparrow \\ \hline \end{array}$$

$$x = \frac{4250 \cdot 100}{5000} = 425 : 5 = 85\% \Rightarrow \textcircled{C}$$

$$14) \text{ a) } [0; 0] \dots \begin{array}{l} y = 3x - 1 \\ 0 \neq 3 \cdot 0 - 1 \end{array}$$

$$\text{ c) } [2; -1] \dots \begin{array}{l} y = 3x - 1 \\ -1 \neq 3 \cdot 2 - 1 \end{array}$$

$$\text{ b) } [1; 3] \dots \begin{array}{l} y = 3x - 1 \\ 3 \neq 3 \cdot 1 - 1 \end{array}$$

$$\text{ d) } [-1; -4] \dots \begin{array}{l} y = 3x - 1 \\ -4 \neq 3 \cdot (-1) - 1 \end{array}$$

$\Rightarrow \textcircled{D}$

15) Celkem 12 úloh

1. den ... $\frac{1}{3} \cdot 12 = 4$ úloh ... zbylo jí $12 - 4 = 8$ úloh

2. den ... $\frac{1}{4} \cdot 8 = 2$ úloh

3. den ... $12 - 6 = 6$ úloh \Rightarrow zbylo jí na 3. den 50% úloh $\Rightarrow \textcircled{D}$

$$16) V = a \cdot b \cdot c$$

$$V = 20 \cdot 4 \cdot 12,5 \text{ cm}^3$$

$$V = 1000 \text{ cm}^3 = [1 \text{ l}] \Rightarrow \textcircled{A}$$

$$17) S = \frac{1}{2} a \cdot \pi r \quad | \cdot 2$$

$$2S = a \cdot \pi r \quad | : \pi r$$

$$\boxed{a = \frac{2S}{\pi r}} \Rightarrow \textcircled{A}$$

$$18) a : b : c = 1 : 2 : 3 \Rightarrow \begin{array}{l} a = 1 \\ b = 2 \\ c = 3 \end{array}$$

$$(a+b) : (a+c) : (b+c) = (1+2) : (1+3) : (2+3) = \boxed{3 : 4 : 5} \Rightarrow \textcircled{A}$$

$$19) \frac{(x-3)}{3} - \frac{x+16}{6} = 2 \quad | \cdot 6$$

$$2(x-3) - (x+16) = 12$$

$$-x - 16$$

\Rightarrow chyba v 1. řádku $\Rightarrow \textcircled{A}$

$$20) (2+4+6+8+10) - (1+3+5+7+9) = 30 - 25 = 5 \Rightarrow \textcircled{B}$$

Leže i zpronek \rightarrow rozdíl sousedních čísel je 1 $\Rightarrow 5 - 1 = \underline{\underline{5}}$

$$21) S_{\Delta} = \frac{a \cdot h}{2} = \frac{8,6 \cdot 7,2}{2} \text{ cm}^2 = 8,6 \cdot 3,6 \text{ cm}^2 = 30,96 \text{ cm}^2$$

$$S_{\square} = 8,6 \cdot 3,6 = 30,96 \text{ cm}^2$$

$$S_{\circ} = 3,14 \cdot 5^2 = 25 \cdot 3,14 = 78,5 \text{ cm}^2$$

$$\begin{array}{r} 8,6 \\ 3,6 \\ \hline 516 \\ 258 \\ \hline 3096 \end{array} \quad \begin{array}{r} 3,14 \\ - 25 \\ \hline 1570 \\ 628 \\ \hline 7850 \end{array}$$

\Rightarrow (A) - opet ke i zponchi ODKADEN

$$22) \begin{array}{l} A \rightarrow 125 \cdot 8 = 1000 \text{ g} \dots 5 \cdot 8 = 40 \text{ kg} \\ B \rightarrow 150 \cdot 6 = 900 \text{ g} \dots 6 \cdot 75 = 450 \text{ kg} \Rightarrow \text{drži se už 900 g} \\ C \rightarrow 400 \cdot 25 = 10000 \text{ g} \Rightarrow 15 \cdot 25 = 3750 \text{ kg} \\ D \rightarrow 500 \cdot 2 = 1000 \text{ g} \Rightarrow 19 \cdot 2 = 38 \text{ kg} \end{array}$$

} (C)

$$23) \begin{array}{l} \text{Matka} \dots \frac{2}{3}x \dots 66 \text{ kg} \\ \text{Otec} \dots x \dots 99 \text{ kg} \\ \text{Celkem} \dots 165 \text{ kg} \end{array} \quad \begin{array}{l} x + \frac{2}{3}x = 165 \quad | \cdot 3 \\ 5x = 495 \\ x = 99 \end{array}$$

Správná odpověď: (B)

$$24) \begin{array}{l} a = 10 \text{ cm} \\ b = 5 \text{ cm} \\ S_1 = ab = 50 \text{ cm}^2 \end{array} \quad \begin{array}{l} a' = 10 + 0,2 \cdot 10 = 12 \text{ cm} \\ b' = 5 + 0,2 \cdot 5 = 6 \text{ cm} \\ S' = 72 \text{ cm}^2 \end{array}$$

$$\begin{array}{l} \uparrow 50 \text{ cm}^2 \dots 100\% \uparrow \\ \uparrow 72 \text{ cm}^2 \dots x\% \uparrow \end{array}$$

$$x = \frac{72 \cdot 100}{50} = 720 : 5 = 144\% \Rightarrow 44\% \Rightarrow (D)$$

$$25) \begin{array}{cccccccc} & 38 & & 69 & & 125 & & 29 & & 91 & & 66 \\ & 19 \cdot 2 & + & 20 \cdot x & + & 23 \cdot 3 & + & 25 \cdot 5 & + & 29 \cdot 1 & + & 31 \cdot 3 & + & 33 \cdot 2 \\ \hline & 2+x & + & 3 & + & 5 & + & 1 & + & 1 & + & 2 & & \\ & \underbrace{\hspace{10em}}_{16+x} & & & & & & & & & & & & = 25 \cdot (16+x) \end{array}$$

$$420 + 20x = 400 + 25x$$

$$20 = 5x$$

$$\boxed{x = 4} \Rightarrow (D)$$

26) K... $\frac{2}{5}x$ $\frac{4}{10}x$
 J... $\frac{1}{5}x$ $\frac{2}{10}x$
 I... $0,3x$ $\frac{3}{10}x$
 E... zbytek $\frac{10}{10}x - \frac{9}{10}x = \frac{1}{10}x$

Muti... $\frac{7}{10}x \rightarrow 40\% \Rightarrow X$

(D) \rightarrow Evr ($\frac{1}{10}x$) snadšo 2x menš než Jevr ($\frac{2}{10}x$)

27) $\frac{K - 2x - y}{3} \Rightarrow$ (D)

Rovnice pro 3tke : $K = y + 2x + 3A$

$3t = K - y - 2x \quad | :3$
 $t = \frac{K - y - 2x}{3}$

28) $S = 6a^2$
 $1350 = 6a^2 \quad | :6$
 $a^2 = 225$

$a = 15\text{cm} \rightarrow$ délka strany krychle

Krychle má 12 hran $\Rightarrow X = 12 \cdot 15 = 180\text{cm} = 1,8\text{m} \Rightarrow$ (A)

29) $\downarrow 144 \text{ kub}^3 \dots 6x \uparrow$
 $\downarrow 216 \text{ kub}^3 \dots X \uparrow$

$\frac{X}{6} = \frac{144}{216} \Rightarrow X = \frac{144 \cdot 6}{216} = (4x) \Rightarrow$ (A)

30) $L = \frac{5x+2}{5x-2} = \frac{\frac{9}{2}}{\frac{1}{2}} = 9$

$P = \frac{25 \cdot \frac{1}{4} + 26 \cdot \frac{1}{2} + 4}{2} = \frac{6,25 + 14}{2} = \frac{20,25}{2}$

$L = P \dots 9 = \frac{20,25}{2}$

$9 \cdot 2 = 20,25$

$2 = \frac{20,25}{9} = 2,25 = \frac{9}{4} \Rightarrow$ (A)

nebo

$\frac{5x+2}{5x-2} = \frac{(5x+2)^2}{2}$

$2 = \frac{(5x+2)^2 \cdot (5x-2)}{(5x-2)}$

$2 = (5x+2)(5x-2)$
 $2 = \frac{9}{2} \cdot \frac{1}{2} = \frac{9}{4}$