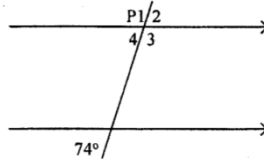


PEMBAHASAN UJIAN NASIONAL MATEMATIKA SMP/MTs PAKET 54

TAHUN PELAJARAN 2010/2011

1. $\angle P4 = 74^\circ$ (sehadap)
 $\angle P4 + \angle P3 = 180^\circ$
 $\angle P3 = 180^\circ - 74^\circ = 106^\circ$



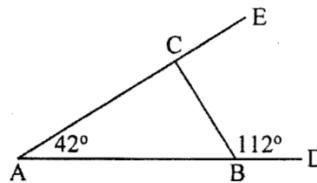
Jawaban : C

2. $\frac{40 \text{ kg gula pasir}}{\frac{1}{4} \text{ kg}} = 40 \times 4 = 160$ kantong plastik

Jadi, banyaknya kantong plastik adalah 160 kantong

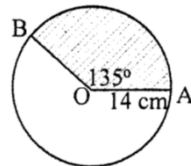
Jawaban : D

3. $\angle ABC + \angle CBD = 180^\circ$
 $\angle ABC = 180^\circ - 112^\circ$
 $\angle ABC = 68^\circ$
 $\angle ABC + \angle BAC + \angle BCA = 180^\circ$
 $\angle BCA = 180^\circ - (68^\circ + 42^\circ)$
 $\angle BCA = 70^\circ$



Jawaban : A

4. Luas Juring AOB = $\frac{135^\circ}{360^\circ} \times \frac{22}{7} \times 14 \text{ cm} \times 14 \text{ cm}$
 $= 231 \text{ cm}^2$



Jawaban : B

5. $\frac{1}{3}(x + 5) = \frac{1}{2}(2x - 1)$
 $\frac{1}{3}x + \frac{5}{3} = x - \frac{1}{2} \rightarrow$ (kedua ruas x 6)
 $2x + 10 = 6x - 3$
 $2x - 6x = -3 - 10$
 $-4x = -13$
 $x = \frac{13}{4}$

Jawaban : D

6. 10 pasang sepatu = Rp 400.000,00
 7 pasang x Rp 50.000,00 = Rp 350.000,00
 2 pasang x Rp 40.000,00 = Rp 80.000,00 +

$$= \text{Rp } 430.000,00$$

$$\text{Keuntungan} = \text{Rp } 400.000,00 - \text{Rp } 430.000,00 = \text{Rp } 30.000,00$$

$$\% \text{ Keuntungan} = x \%$$

$$\frac{x}{100} \times \text{Rp } 400.000,00 = \text{Rp } 30.000,00$$

$$4000x = \text{Rp } 30.000,00$$

$$x = 7 \frac{1}{2} \%$$

Jawaban : A

$$\begin{aligned} 7. (x - 2y)^2 &= (x - 2y)(x - 2y) \\ &= x^2 - 2xy - 2xy + 4y^2 \\ &= x^2 - 4xy + 4y^2 \end{aligned}$$

Jawaban : C

$$8. A = x - y, B = 3x - 4y$$

$$A - B = (x - y) - (3x - 4y)$$

$$= x - y - 3x + 4y$$

$$= -2x + 3y$$

Jawaban : A

$$9. 4p^3 q^2 x 6p^2 r^3 = 24 p^5 q^2 r^3$$

Jawaban : B

$$10. U_n = 2n - n^2$$

$$U_{10} + U_{11} = (2 \cdot 10 - 10^2) + (2 \cdot 11 - 11^2)$$

$$= -80 + (-99) = -179$$

Jawaban : B

11. Bunga pertahun 8%

Ditabung selama $2\frac{1}{2}$ tahun menjadi Rp 3.000.000,00

Jika tabungan awal = x

$$\text{Maka, } 8\% \times 2\frac{1}{2} \times x = \text{Rp } 3.000.000,00 - x$$

$$\frac{8}{100} \times 2\frac{1}{2} \times x = \text{Rp } 3.000.000,00 - x$$

$$\frac{x}{5} - x = \text{Rp } 3.000.000,00$$

$$\frac{x+5x}{5} = \text{Rp } 3.000.000,00 \rightarrow \frac{6x}{5} = \text{Rp } 3.000.000,00$$

$$6x = \text{Rp } 15.000.000,00$$

Jawaban : A

$$12. \frac{2x^2-3x-9}{4x^2-9} = \frac{(2x+3)(x-3)}{(2x+3)(2x-3)}$$

$$= \frac{x-3}{2x-3}$$

Jawaban : C

13. 24 orang → 20 hari

x orang → 15 hari

Banyak pekerja tambahan ?

$$\frac{24}{x} = \frac{15}{20} \rightarrow 15x = 480$$

$$x = 32$$

Banyak pekerja tambahan = $32 - 24 = 8$ orang

Jawaban : B

14. $K = \{x \mid 5 \leq x \leq 9, x \text{ bilangan asli}\}$

$$K = \{5, 6, 7, 8, 9\}$$

$L = \{x \mid 7 \leq x < 13, x \text{ bilangan cacah}\}$

$$L = \{7, 8, 9, 10, 11, 12\}$$

$$K \cup L = \{5, 6, 7, 8, 9, 10, 11, 12\}$$

Jawaban : B

15. Skala 1 : 250

Ruang berukuran = 2 cm x 3 cm

Luas sebenarnya ?

Skala 1 cm mewakili 250 cm

$$2 \text{ cm} = 500 \text{ cm} = 5 \text{ m}$$

$$3 \text{ cm} = 750 \text{ cm} = 7,5 \text{ m}$$

$$\text{Luas sebenarnya} = 5 \text{ m} \times 7,5 \text{ m} = 37,5 \text{ m}^2$$

Jawaban : B

16. $f(x) = 3 - 5x$

$$f(-4) = 3 - 5(-4)$$

$$f(-4) = 23$$

Jawaban : D

17. $0,4; \frac{3}{8}; 15\%; 0,25$ urutan dari terkecil ke terbesar ...

$$0,4 = 0,4 \quad \frac{3}{8} = 0,375$$

$$15\% = 0,15 \quad 0,25 = 0,25$$

Urutan dari terkecil ke terbesar $15\%; 0,25; \frac{3}{8}; 0,4$

Jawaban : B

$$\begin{aligned}
 18. & -24 + 72 : (-12) - 2 \times (-3) \\
 & = -24 + (-6) + 6 \\
 & = -24
 \end{aligned}$$

Jawaban : A

19. $S = 30$ siswa

$A = 16$ siswa

$B = 12$ siswa

$(A \cup B)^c = 9$ siswa

$S = A \cup B + (A \cup B)^c$

$A \cup B = 30 - 9 = 21$

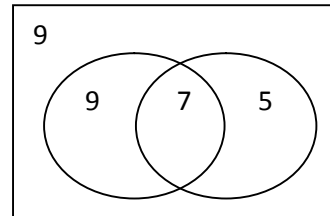
Misal $A \cap B = x$

$$(A - x) + (B - x) + x = 21$$

$$16 - x + 12 - x + x = 21$$

$$16 + 12 - 21 = x$$

$$x = 7$$



Jawaban : C

20. $2x - 3y = -17$ | $\times 3$ | $6x - 9y = -51$ (eliminasi x)

$3x + 2y = -6$ | $\times 2$ | $6x + 4y = -12$

$$-13y = -39$$

$$y = 3$$

$3x + 2(3) = -6$ (substitusi y)

$3x = -6 - 6$

$x = -4$

$x + y = -4 + 3 = -1$

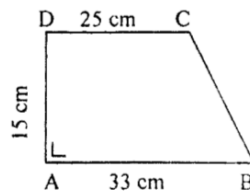
Jawaban : B

21. $AB - CD = 33 - 25 = 8$ cm

$BC = \sqrt{15^2 + 8^2}$

$BC = \sqrt{225 + 64} = \sqrt{289}$

$BC = 17$ cm



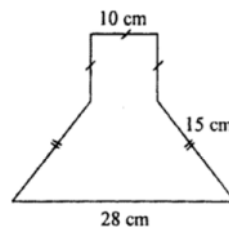
Jawaban : B

22. Luas 1 = $10 \times 10 = 100$ cm²

Luas 2 = $\frac{10+28}{2} \times 12 = 228$ cm²

Luas gabungan = $100 + 228$ cm²

Luas total = 328 cm²



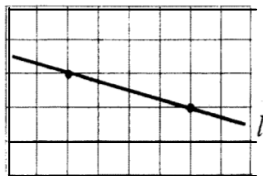
Jawaban : D

23. $(x_1, y_1) = (2, 3)$

$(x_2, y_2) = (6, 2)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{2-3}{6-2} = -\frac{1}{4}$$



Jawaban : B

24. $2 = -x + 1$

titik $(-2, 1)$

$$m_1 = -\frac{1}{2}$$

$$y - y_1 = m(x - x_1)$$

$$\perp m_1 \cdot m_2 = -1$$

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

$$m_2 = \frac{-1}{-\frac{1}{2}}$$

$$y = 2x + 5$$

$$m_2 = 2$$

Jawaban : A

25. $y = \frac{1}{2}x - 2$

$$y = 0 \rightarrow \frac{1}{2}x - 2 = 0$$

$$x = 0 \rightarrow y = \frac{1}{2} \cdot 0 - 2$$

$$x = 4$$

$$y = -2$$

Titik $(4, 0)$ dan $(0, -2)$

Jawaban : C

26. Rata – rata 9A = 78 \rightarrow misal jumlah siswa = y

Rata – rata 10 siswa = 85

Rata – rata semua nilai = 80

Misal banyak siswa kelas 9A = $x \rightarrow x = y + 10$

$$\text{Rata – rata semua nilai} = \frac{(78 \cdot y) + (10 \cdot 85)}{y+10}$$

$$80 = \frac{78y + 850}{y+10} \rightarrow 80y + 800 = 78y + 850$$

$$2y = 50 \rightarrow y = 25$$

$$x = y + 10 \rightarrow x = 35$$

Jadi, banyak siswa kelas 9A = 35 orang

Jawaban : D

27. Median = nilai tengah

$$\text{Banyak siswa} = 30 \rightarrow \frac{30}{2} = 15$$

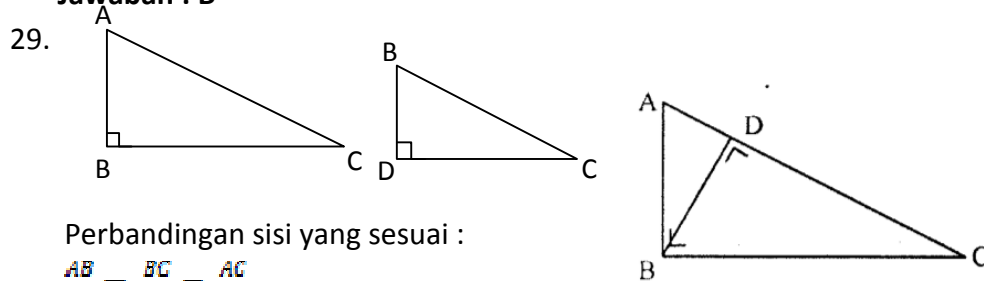
Pada tabel nilai, 15 siswa tepat menunjukkan nilai 6. Karena jumlah siswa genap, maka median tepat diantara nilai 6 dan 7 yaitu 6,5.

Jawaban : B

28. Jan-Feb = $15 - 20 = -5$ Jul-Ags = $15 - 15 = 0$
 Feb-Mar = $15 - 15 = 0$ Ags-Sep = $17,5 - 15 = 2,5$
 Mar-Apr = $20 - 15 = 5$ Sep-Okt = $20 - 17,5 = 2,5$
 Apr-Mei = $20 - 20 = 0$ Okt-Nov = $23 - 20 = 3$
 Mei-Jun = $15 - 20 = -5$ Nov-Des = $23 - 23 = 0$
 Jun-Jul = $15 - 15 = 0$

Kenaikan penjualan terbesar terjadi pada bulan Maret – April = 5 kuintal

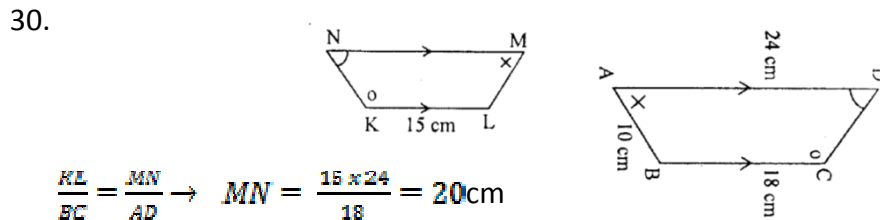
Jawaban : B



Perbandingan sisi yang sesuai :

$$\frac{AB}{BD} = \frac{BC}{CD} = \frac{AC}{BC}$$

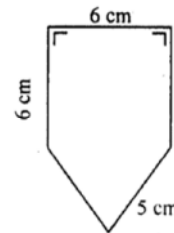
Jawaban : A



$$\frac{KL}{BC} = \frac{MN}{AD} \rightarrow MN = \frac{15 \times 24}{18} = 20 \text{ cm}$$

Jawaban : C

31. Luas karton (1 kartu) = $(6 \times 6) + \left(\frac{1}{2} \cdot 6 \cdot 4\right)$
 $= 36 \text{ cm}^2 + 12 \text{ cm}^2$
 $= 48 \text{ cm}^2$
 Luas karton (160 kartu) = $48 \text{ cm}^2 \times 160 = 7.680 \text{ cm}^2$

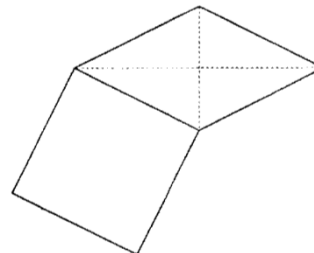


Jawaban : D

32. $d_1 = 10 \text{ cm}$ ($\frac{10}{2} = 5 \text{ cm}$), $d_2 = 24 \text{ cm}$ ($\frac{24}{2} = 12 \text{ cm}$)

Panjang sisi belahketupat = sisi persegi = $\sqrt{12^2 + 5^2}$
 $= 13 \text{ cm}$

Keliling gabungan = 3 sisi belahketupat + 3 sisi persegi
 $= 3(13) + 3(13)$



$$= 78 \text{ cm}$$

Jawaban : D

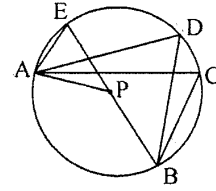
$$33. \angle AEB + \angle ADB + \angle ACB = 228^\circ$$

$$\angle AEB = \angle ADB = \angle ACB = \frac{228^\circ}{3} = 76^\circ$$

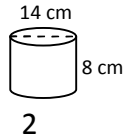
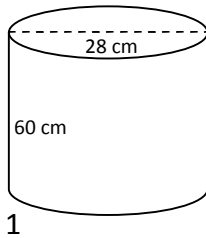
$$\angle APB = \angle AEB + \angle ADB = \angle ADB + \angle ACB = \angle AEB + \angle ACB$$

$$\angle APB = 76^\circ + 76^\circ = 152^\circ$$

Jawaban : B



34.



$V_1 = \text{banyaknya beras} = \pi r^2 t$

$$V_1 = \frac{22}{7} \times 14 \cdot 14 \times 60 = 36960 \text{ cm}^3$$

$2V_2 = \text{beras yang diambil perhari}$

$$2V_2 = 2 \times \frac{22}{7} \times 7 \cdot 7 \times 8 = 2464 \text{ cm}^3$$

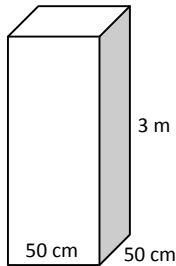
Persediaan beras akan habis dalam waktu = $V_1 : 2V_2$

$$= 36960 \text{ cm}^3 : 2464 \text{ cm}^3$$

$$= 15 \text{ hari}$$

Jawaban : A

35. Tugu berbentuk balok dengan alas persegi



Bagian tugu yang akan dicat adalah bagian permukaan saja, jadi

luas permukaan tugu = $2(pl + pt + lt)$

$$L_{\text{permukaan}} = 2(50 \cdot 50 + 50 \cdot 300 + 50 \cdot 300) = 65.000 \text{ cm}^2 = 6,5 \text{ m}^2$$

1 kaleng cat untuk 1 m^2 , maka untuk $6,5 \text{ m}^2$ membutuhkan cat sebanyak minimal 7 kaleng cat

Jawaban : C

36. Keliling alas = 72 cm

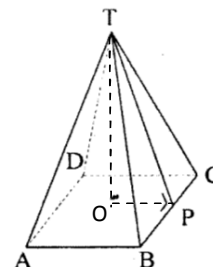
$$AB = \frac{72}{4} \text{ cm} = 18 \text{ cm}$$

$$OP = 9 \text{ cm}, TP = 15 \text{ cm}, \text{ maka } OT = \sqrt{15^2 - 9^2} = \sqrt{225 - 81}$$

Tinggi limas = $OT = 12 \text{ cm}$

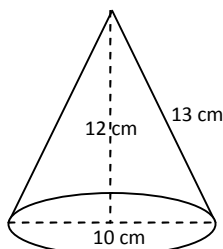
$$\text{Volume limas} = \frac{1}{3} \times L_{\text{alas}} \times t = \frac{1}{3} \times 18 \cdot 18 \times 12$$

$$\text{Volume limas} = 1296 \text{ cm}^3$$



Jawaban : A

37. Luas permukaan kerucut = $\pi r (r + s)$



$$s = \sqrt{12^2 + 5^2} = \sqrt{255 + 25}$$

$$s = 13 \text{ cm}$$

$$L_{\text{permukaan}} = \pi \cdot 5 (5 + 13)$$

$$L_{\text{permukaan}} = 90\pi \text{ cm}^2$$

Jawaban : B

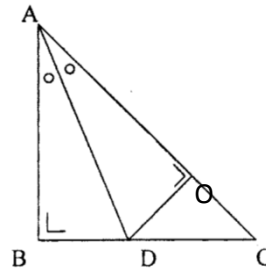
38. Segitiga ABC siku – siku sama kaki

$$AB = BC = AO = 3 \text{ cm}$$

$$AC = \sqrt{3^2 + 3^2} = 3\sqrt{2} \text{ cm}$$

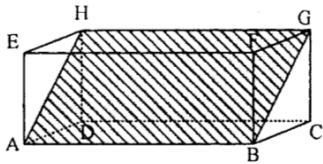
$$OC = (3\sqrt{2} - 3) \text{ cm}$$

$$OC = OD = BD = (3\sqrt{2} - 3) \text{ cm}$$



Jawaban : B

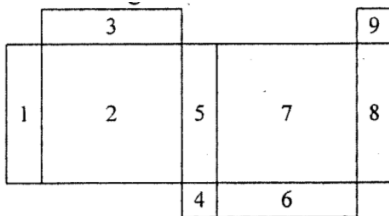
39.



Bidang ABGH adalah bidang diagonal

Jawaban : C

40.



Bidang yang harus dihilangkan adalah nomor 4, 8, dan 9

Jawaban : B