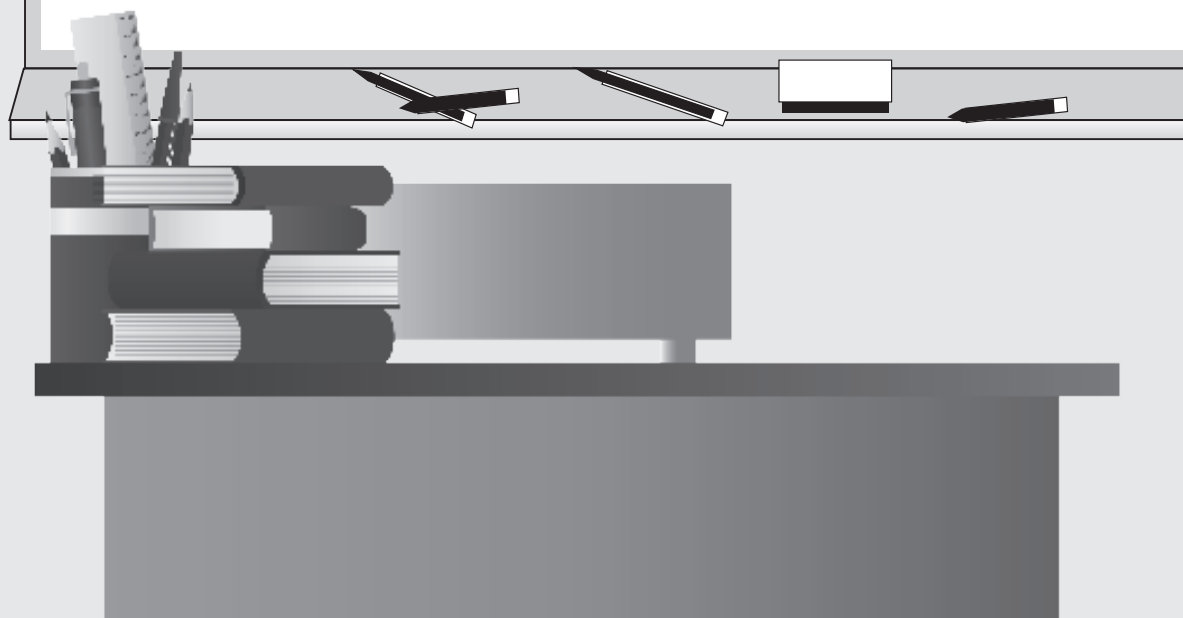Pembahasan
& Kunci Jawaban

MATEMATIKA

Kelas: 9 **SMP/MTs**

1. Pembahasan:

$$\frac{5}{\sqrt{5}} = \frac{5}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{5\sqrt{5}}{5} = \sqrt{5}$$

Jawaban B

2. Pembahasan:

$$\sqrt{60} : \sqrt{5} = \sqrt{60 : 5} = \sqrt{12}$$
$$= \sqrt{4 \times 3} = \sqrt{4} \times \sqrt{3} = 2\sqrt{3}$$

Jawaban C

3. Pembahasan:

$$64^{\frac{5}{6}} = \left(2^6\right)^{\frac{5}{6}} = 2^{6 \times \frac{5}{6}} = 2^5 = 32$$

Jawaban C

4. Pembahasan:

Ayam	Persediaan makanan (hari)
60	24
60-15=45	x

$$\frac{60}{45} = \frac{24}{x}$$
$$45x = 24 \times 60$$
$$45x = 1440$$
$$x = \frac{1440}{45}$$
$$x = 32$$

Jawaban C

5. Pembahasan:

$$2\frac{1}{3} + 5\frac{1}{4} - 1\frac{1}{2} = \frac{7}{3} + \frac{21}{4} - \frac{3}{2}$$
$$= \frac{28}{12} + \frac{63}{12} - \frac{18}{12} = \frac{73}{12} = 6\frac{1}{12}$$

Jawaban A

6. Pembahasan:

Tabungan akhir = Tabungan Awal + $p\% \times n \times$ tabungan awal

$$920.000 = 800.000 + 9\% \times n \times 800.000$$
$$920.000 - 800.000 = \frac{9}{100} \times n \times 800.000$$
$$120.000 = 72.000 \times n$$
$$n = \frac{120.000}{72.000}$$
$$n = \frac{5}{3} tahun$$
$$n = \frac{5}{3} \times 12 bulan$$
$$n = 20 bulan$$

Jawaban B

7. Pembahasan:

$$b = \frac{U_9 - U_5}{9 - 5} = \frac{20 - 8}{4} = \frac{12}{4} = 3$$
$$U_{10} = U_9 + (10 - 9) \times b =$$
$$10 + 1 \times 3 = 20 + 3 = 23$$

Jawaban C

8. Pembahasan:

$$b = \frac{U_7 - U_3}{7 - 3} = \frac{38 - 18}{4} = \frac{20}{4} = 5$$
$$a = U_1 = U_3 + (1 - 3) \times b = 18 - 2 \times 5 =$$
$$18 - 10 = 8$$
$$S_n = \frac{n}{2}(2a + (n - 1) \times b$$
$$S_{24} = \frac{24}{2}(2(8) + (24 - 1) \times 5$$
$$S_{24} = 12(16 + (23 \times 5))$$
$$S_{24} = 12(16 + 115)$$
$$S_{24} = 12 \times 131$$
$$S_{24} = 1572$$

Jawaban C

9. **Pembahasan:**

Barisan kursi : 20, 23, …. U_{20}

a = 20

b = 3

$$S_n = \frac{n}{2}(2a + (n-1) \times b$$

$$S_{20} = \frac{20}{2}(2(20) + (20-1) \times 3$$

$$S_{20} = 10(40 + (19 \times 3))$$

$$S_{20} = 10(40 + 57)$$

$$S_{20} = 10 \times 97$$

$$S_{20} = 970$$

Jawaban B

10. **Pembahasan:**

$$2(p + l) = 144$$

$$2((3x + 10) + (x + 10)) = 144$$

$$2(4x + 20) = 144$$

$$8x + 40 = 144$$

$$8x = 144 - 40$$

$$x = \frac{104}{8} = 13$$

$$p = 3x + 10$$

$$p = 3 \times 13 + 10$$

$$p = 39 + 10$$

$$p = 49 cm$$

$$l = x + 10$$

$$l = 13 + 10$$

$$l = 23 cm$$

Jawaban D

11. **Pembahasan:**

$$5x - 8 = 3x + 12$$

$$5x - 3x = 12 + 8$$

$$2x = 20$$

$$x = 10$$

$$x + 3 = 10 + 3 = 13$$

Jawaban A

12. **Pembahasan:**

Jawaban yang benar adalah pemfaktoran pada no i dan iii

Jawaban B

13. **Pembahasan:**

$$n(P) = 3$$

Banyaknya himpunan bagian dari

$$P = 2^{n(p)} = 2^3 = 8$$

Jawaban C

14. **Pembahasan:**

Diketahui:

$$n(P \cup C) = 40$$

$$n(P) = 23$$

$$n(P \cap C) = 12$$

$$n(P \cup C) = n(P) + n(C) - n(P \cap C)$$

$$40 = 23 + n(C) - 12$$

$$40 = 11 + n(C)$$

$$40 - 11 = n(C)$$

$$n(C) = 29 \, orang$$

Jawaban C

15. **Pembahasan:**

$$3x + 4y = 17 \rightarrow 3x + 4y = 17$$

$$4x - 2y = 8 \rightarrow \underline{8x - 4y = 16} +$$

$$11x = 33$$

$$x = \frac{33}{11} = 3$$

$$x = 3 \rightarrow 3x + 4y = 17$$

$$\rightarrow 3(3) + 4y = 17$$

$$\rightarrow 9 + 4y = 17$$

$$\rightarrow 4y = 17 - 9$$

$$\rightarrow y = \frac{8}{4} = 2$$

$$2x + 3y = 2(3) + 3(2) = 6 + 6 = 12$$

Jawaban B

16. Pembahasan:

$3A + 5B = 39000 \rightarrow 3A + 5B = 39000$

$A + B = 11000 \rightarrow \underline{3A + 3B = 33000} +$

$\qquad\qquad\qquad\qquad 2B = 6000$

$$B = \frac{6000}{2} = 3000$$

$B = 3000 \rightarrow A + B = 11000$

$A + 3000 = 11000$

$A = 11000 - 3000$

$A = 8000$

$4A + 2B = 4(8000) + 2(3000)$

$= 32000 + 6000$

$= 38000$

Jawaban C

17. Pembahasan:

$f(x) = 3x + 5$

$f(a) = 3a + 5 = -7$

$3a = -7 - 5$

$a = \dfrac{-12}{3}$

$a = -4$

Jawaban B

18. Pembahasan:

$x = 0 \rightarrow y = 2(0) - 1$

$y = -1$ maka titiknya adalah (0,-1)

$x = 2 \rightarrow y = 2(2) - 1$

$y = 4 - 1$

$y = 3$

maka titiknya adalah (2, 3)

Jawaban A

19. Pembahasan:

$$m_{PQ} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 8}{2 - (-3)} = \frac{-3}{2 + 3} = -\frac{3}{5}$$

Syarat tegak lurus:

$m \times m_{PQ} = -1$

$m \times -\dfrac{3}{5} = -1$

$m = -1 \times -\dfrac{5}{3}$

$m = \dfrac{5}{3}$

Jadi kita cari persamaan garis yang memiliki gradient $\dfrac{5}{3}$

A. $3x - 5y - 14 = 0 \rightarrow m = \dfrac{3}{5}$

B. $3x - 5y + 14 = 0 \rightarrow m = -\dfrac{3}{5}$

C. $5x + 3y - 42 = 0 \rightarrow m = -\dfrac{5}{3}$

D. $5x - 3y - 42 = 0 \rightarrow m = \dfrac{5}{3}$

Jawaban D

20. Pembahasan:

$$\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$$

$$\frac{a - 7}{-3 - 7} = \frac{3 - 2}{-3 - 2}$$

$$\frac{a - 7}{-10} = \frac{1}{-5}$$

$a - 7 = \dfrac{1}{-5}(-10)$

$a - 7 = 2$

$a = 2 + 7$

$a = 9$

Jawaban C

21. Pembahasan:

panjang tali (nilai asli) =

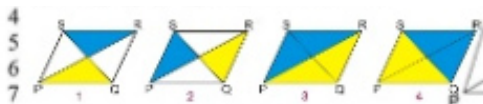$\sqrt{150^2 + 150^2} = \sqrt{150^2 \times 2} = 150\sqrt{2}$

panjang tali (pendekatan)=

$$\sqrt{150^2 + 150^2} = \sqrt{22500 \times 22500}$$
$$= \sqrt{45000} \approx \sqrt{44944} = 212m$$

Jawaban B

22. Pembahasan:

Jawaban A

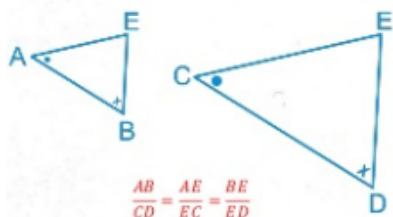**23. Pembahasan:**

$$\frac{CE}{AC} = \frac{DE}{AB}$$

$$\frac{CE}{15} = \frac{8}{12}$$

$$CE = \frac{8}{12} \times 15$$

$$CE = 10cm$$

Jawaban A

24. Pembahasan:

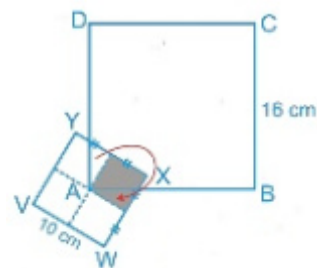$$\frac{AB}{CD} = \frac{AE}{EC} = \frac{BE}{ED}$$

Perbandingan untuk gambar tersebut adalah:

$$\frac{AB}{CD} = \frac{AE}{EC} = \frac{BE}{ED}$$

Jawaban A

25. Pembahasan:

$$L_{arsiran} = \frac{1}{4} \times L_{VWXY}$$

$$= \frac{1}{4} \times 10^2$$

$$= \frac{1}{4} \times 100$$

$$= 25cm^2$$

Jawaban C

26. Pembahasan:

$$K_{bangun} = 2 \times (17 + 8 + 5 + 6 + 5 + 4)$$

$$= 2 \times 45 = 90\,cm$$

Jawaban A

27. Pembahasan:

Panjang busur AB=

$$= \frac{\angle AOB}{360°} \times K_{lingkaran}$$

$$= \frac{60°}{360°} \times 2\mathrm{p}r$$

$$= \frac{60°}{360°} \times 2 \times 3,14 \times 10$$

$$= 10,466 = 10,47cm$$

Jawaban B

28. Pembahasan:

$$AB = \sqrt{PL^2 + (R - r)^2}$$

$$= \sqrt{24^2 + (12 - 5)^2} = \sqrt{24^2 + 7^2}$$

$$= \sqrt{576 + 49} = \sqrt{625} = 25cm$$

Jawaban C

29. Pembahasan:

$$\angle A + \angle B = 180°$$
$$(5y - 16)° + 2y° = 180°$$
$$5y° - 16° + 2y° = 180°$$
$$7y° - 16° = 180°$$
$$7y° = 180° + 16°$$
$$7y° = 196°$$
$$y° = \frac{196°}{7}$$
$$y° = 28°$$
$$A = (5y - 16)°$$
$$= (5y - 16)°$$
$$= (5(28) - 16)°$$
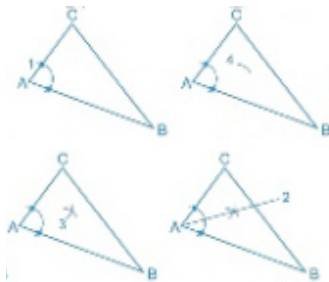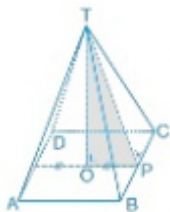$$= (140 - 16)°$$
$$= 124°$$

Jawaban C

30. Pembahasan:

Garis bagi adalah garis yang ditarik dari salah satu sudut pada segitiga sehingga memagi sudut tersebut menjadi dua sama besar.

Jawaban B

31. Pembahasan:

$$V_{prisma} = L_{trapesium} \times t_{prisma}$$
$$= \left(\frac{1}{2} \times \text{jumlah sisi sejajar} \times t_{trapesium} \right) \times t_{prisma}$$
$$= \left(\frac{1}{2} \times (8 + 12) \times 5 \right) \times 10$$
$$= 50 \times 10$$
$$= 500 cm^3$$

Jawaban D

32. Pembahasan:

$$AB = BC = \frac{K_{persegi\ ABCD}}{4} = \frac{64}{4} = 16$$
$$OP = \frac{1}{2} \times AB = \frac{1}{2} \times 16 = 8$$
$$TP = \sqrt{OT^2 + OP^2} = \sqrt{15^2 + 8^2}$$
$$= \sqrt{225 + 64} = \sqrt{289} = 17$$
$$L_{permukan\ limas} = L_{persegi\ ABCD} + 4 \times L_{segitiga\ BCT}$$
$$= AB^2 + 4 \times \frac{1}{2} \times BC \times TP$$
$$= 16^2 + 4 \times \frac{1}{2} \times 16 \times 17$$
$$= 256 + 544 = 800 cm^2$$

Jawaban B

33. Pembahasan:

$$OD = r = \frac{1}{2} \times AB = \frac{1}{2} \times 14 = 7$$
$$OP = 36 - AD = 36 - 12 = 24$$
$$DP = s = \sqrt{OD^2 + OP^2} = \sqrt{7^2 + 24^2}$$
$$= \sqrt{49 + 576} = \sqrt{625} = 25$$
$$L_{permukaan\ tabung}$$
$$= L_{permukaan\ tabung\ tanpa\ tutup} + L_{selimut\ kerucut}$$
$$= (pr^2 + 2prt) + prs$$
$$= \left(\frac{22}{7} \times 7^2 + 2 \times \frac{22}{7} \times 7 \times 12 \right) + \frac{22}{7} \times 7 \times 25$$
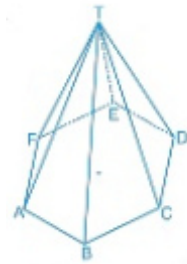$$= (154 + 528) + 550$$
$$= 682 + 550$$
$$= 1232 cm^2$$

Jawaban C

34. Pembahasan:

Rusuk : AB, BC, CD, DE, EF, FA,
AT, BT, CT, DT, ET, FT
= 12 buah

Sisi : ABCDEF, ABT, BCT, CDT,
DET, EFT, FAT = 7 buah

Jawaban B

35. Pembahasan:

(i)   **(ii)**

(iii)   **(iv)**

Yang merupakan jaring-jaring kubus
adalah (ii) dan (iv)

Jawaban D

36. Pembahasan:

$$\bar{X} = \frac{(3 \times 3) + (4 \times 5) + (5 \times 12) + (6 \times 7) + (8 \times 4) + (9 \times 3)}{3 + 5 + 12 + 7 + 6 + 4 + 3}$$

$$= \frac{232}{40} = 5,8$$

Jadi banyak siswa yang lulus adalah=
7+6+4+3=20 orang

Jawaban C

37. Pembahasan:

$$\bar{X}_{gabungan} = \frac{n_p \times \bar{X}_p + 133 + 127}{n_p + 1 + 1}$$

$$= \frac{23 \times 130 + 133 + 127}{23 + 1 + 1}$$

$$= \frac{23 \times 130 + 260}{25}$$

$$= \frac{23 \times 130 + 2 \times 130}{25}$$

$$= \frac{130(23 + 2)}{25}$$

$$= \frac{130 \times \times 25}{25}$$

$$= 130$$

Jawaban B

38. Pembahasan:

Urutan data:

165 cm, 166 cm, 168 cm, 168 cm,
170 cm, 171 cm, 171 cm, 172 cm,
173 cm, 173 cm, 175 cm, 178 cm,
182 cm.

Mediannya adalah 171 cm.

Jawaban A

39. Pembahasan:

150 + 250 = 400 orang.

Jawaban C

40. Pembahasan:

n(bola bernomor lebih dari 6) = 2

n(S) = 8

P(bola berwarna lebih dari 6) =

$$\frac{n(\text{bola bernomor lebih dari 6})}{n(S)} = \frac{2}{8}$$

Jawaban A