

UN 2019 Physic

→ Pengukuran 2 Angka penting.

① . $p = 1,8 \text{ (2.0.01)} = 1,82 \rightarrow 3 \text{ Ap}$
 $l = 0,4 \text{ (5.0.01)} = 0,46 \rightarrow 2 \text{ Ap}$
 $t = 1,3 \text{ (5.0.01)} = 1,35 \rightarrow 3 \text{ Ap}$

→ Rumus Jangka sorong

$$P = SU + (S:N \times NST)$$

0,01 cm

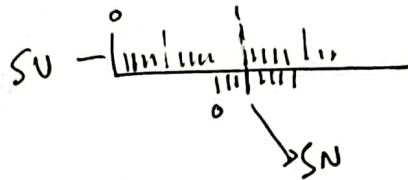
Garis yang sejajar
dengan Skala Utama.

$$V = p \cdot l \cdot t$$

$$= 1,82 \cdot 0,46 \cdot 1,35$$

$$= 1,13022 \text{ cm}^3$$

$$= 1,1 \text{ cm}^3 \rightarrow \text{Angka penting hanya 2 saja. } \textcircled{C}$$



Dalam perhitungan
ikuti angka pada
terakhir data pengamatan

- Semua angka bukan nol adalah angka penting. (1,2,3,4,5)

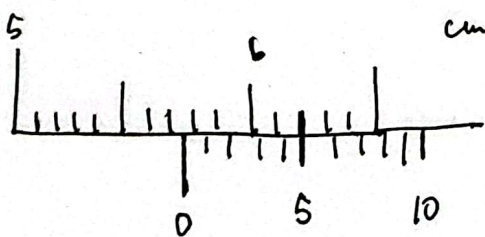
- Angka nol yg terletak diantara angka nol adalah angka penting.
(100,01 → 5 Ap, 20051 → 5 Ap)

- Angka nol yg terletak setelah angka bukan nol bukan angka penting kecuali jika di beri tanda. → 3600 → 2 Ap

- Angka nol dengan desimal bukan angka penting → 0,04 → 1 Ap, 0,0002 → 2 Ap

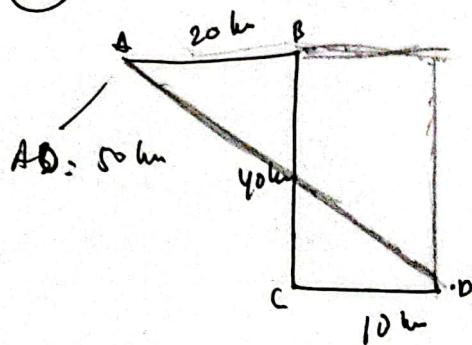
- Angka nol sebelum angka desimal merupakan angka penting → 0,050 → 2 Ap
 → 1,360 → 4 Ap

Contoh :



②

— Perpendicular



$$S = \sqrt{(20+10)^2 + 40^2}$$

$$S = \sqrt{30^2 + 40^2}$$

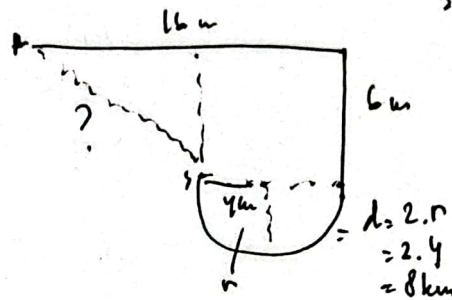
$$S = \sqrt{900 + 1600}$$

$$S = \sqrt{2500}$$

$$S = 50 \text{ km}$$

perpendicular 50 km \rightarrow (c)

Latihan



$$S = \sqrt{(16-8)^2 + 6^2}$$

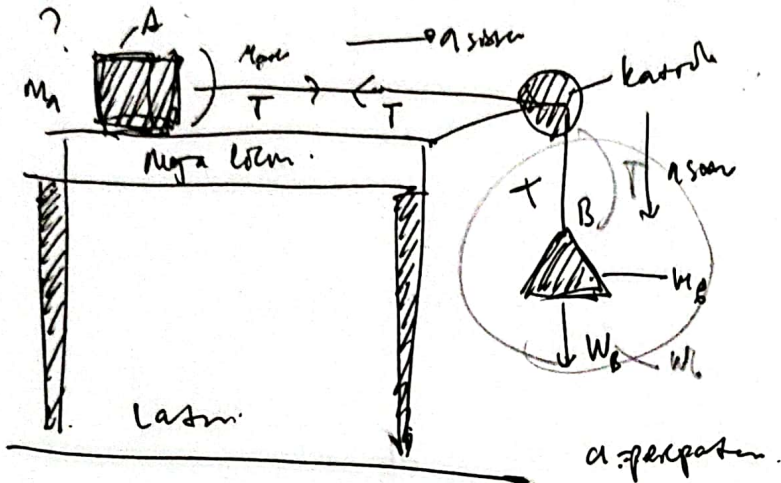
$$= \sqrt{8^2 + 6^2}$$

$$= \sqrt{64 + 36}$$

$$= \sqrt{100}$$

$$= 10 \text{ km}$$

③ → Newton Law



Percepatan block A?

A & B → ini ada tali jadi sama aja
percepatan tali sama aja

$$a_{\text{sistem}} = a_A = a_B = a \rightarrow \text{Sama aja saat tali}$$

Tinjau block B:

HA II

$$\sum F = m \cdot a$$

$$W_B - T = m_B \cdot a$$

$$m_B \cdot g - T = m_B \cdot a$$

$$T = m_B \cdot g - m_B \cdot a$$

Tinjau block A:

$$\sum F = m \cdot a$$

$$T = m_A \cdot a$$

$$m_B \cdot g - m_B \cdot a = m_A \cdot a$$

~~g~~

$$m_B \cdot g = m_A \cdot a + m_B \cdot a$$

$$m_B \cdot g = (m_A + m_B) a$$

$$a = \frac{m_B \cdot g}{(m_A + m_B)} = \text{jawab } \textcircled{D}$$

$$a = \frac{m_B \cdot g - T}{m_B} \text{ dan } T = m_A \cdot a$$

9) Hukum Kepler III

$$\boxed{\frac{T^2}{r^3} = \text{konstan}}$$

$$\left(\frac{T_1}{T_2}\right)^2 = \left(\frac{r_1}{r_2}\right)^3 \rightarrow \text{Perbandingan orbit.}$$

$T = \text{Periode revolusi / orbit}$
 $r = \text{Jari-jari orbitnya (m)}$

$$\left(\frac{T_1}{T_2}\right)^2 = \left(\frac{4}{9}\right)^3 = \frac{64}{729}$$

$$\frac{T_1}{T_2} = \sqrt{\frac{64}{729}} = \frac{\sqrt{64}}{\sqrt{729}}$$

$$\frac{T_1}{T_2} = \frac{8}{27} = \underline{1:27 \text{ jam (C)}}$$

5)

$W = F \cdot s$ \rightarrow Hukum II newton

$$W = F \cdot \left(v_0 \cdot t + \frac{1}{2} a t^2 \right)$$

$$W = F \left(0 + \frac{1}{2} \frac{F}{m} t^2 \right) = \frac{(Ft)^2}{2m} \rightarrow F \propto \left(\frac{1}{2} \frac{F}{m} t^2 \right)$$

$$\rightarrow \frac{F^2 t^2}{2m}$$



$$a = \frac{F}{m}$$

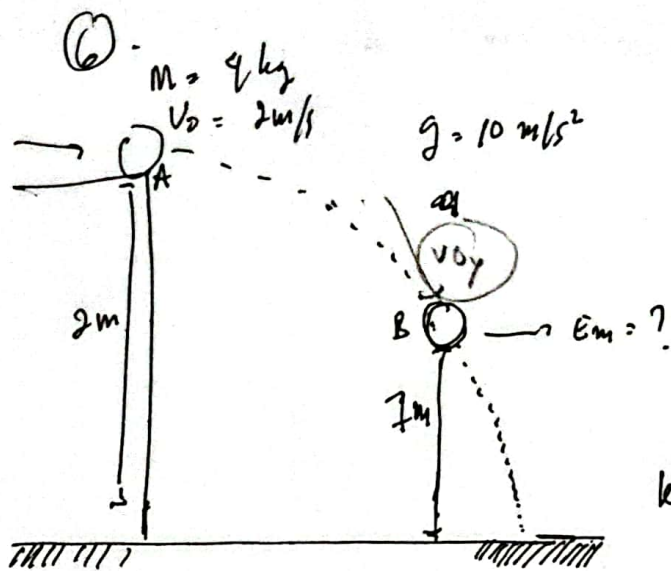
$$W_1 = \frac{(25 \cdot 4)^2}{2 \cdot 40} = 125 \text{ joule}$$

$$W_2 = \frac{(30 \cdot 2)^2}{2 \cdot 30} = 60 \text{ joule}$$

$$W_3 = \frac{(20 \cdot 10)^2}{2 \cdot 25} = 800 \text{ joule}$$

$$W_4 = \frac{(10 \cdot 5)^2}{2 \cdot 50} = 25 \text{ joule}$$

urut ke besar $\rightarrow 4 \rightarrow 2 \rightarrow 1 \rightarrow 3$ (E)



Dalam kehidupan sehari-hari

Energi mekanik = Energi potensial + Energi kinetik

$$E_m = E_p + E_k$$

$$E_p = m \cdot g \cdot h$$

$$E_k = \frac{1}{2} m \cdot v^2$$

ketika 2 meter :

$$\begin{aligned} E_m &= m \cdot g \cdot h + \frac{1}{2} m v^2 \\ &= 4 \cdot 10 \cdot 2 + \frac{1}{2} \cdot 4 \cdot 2^2 \\ &= 80 + 8 \\ &= 88 \text{ J} \end{aligned}$$

Karena dalam kehidupan sehari-hari energi mekanik itu tidak ada gesekan udara maka nilainya konstan

jadi saat $h = 1 \text{ meter}$

$$\text{Kita tahu } E_{m1} = E_{m2} \text{ tetap.}$$

Jadi:

Cara ke 2: $v_0 = v_{0x} = v_p = 2 \text{ m/s}$
 $v_{0y} = ? = 0 \text{ m/s}$

$$h_2 = v_{0y} t + \frac{1}{2} g t^2$$

$$1 = 0 + \frac{1}{2} \cdot 10 \cdot t^2$$

$$1 = 5 \cdot t^2$$

$$t = \sqrt{\frac{1}{5}}$$

$$t = \sqrt{0,2} \text{ s}$$

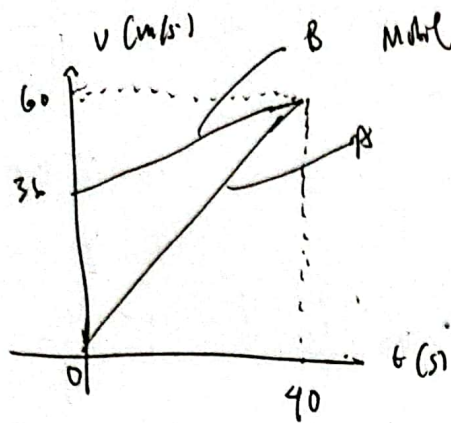
Kelompokkan ball dan air:

$$\begin{aligned} v_y &= v_{0y} + g t \\ &= 0 + 10 \cdot \sqrt{0,2} \\ &= 10 \sqrt{0,2} \text{ m/s} \end{aligned}$$

Kelompokkan ball saat ketinggian 1 m :

$$\begin{aligned} E &= \sqrt{(v_x + v_y)^2} \\ &= \sqrt{2^2 + (10 \sqrt{0,2})^2} \\ &= \sqrt{4 + 20} \end{aligned}$$

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Mobil A dan B bergerak dari posisi dan lintasan yang sama.

Pernyataan : (1) salah \rightarrow karena mobil A dan B dipercepat

(2) benar \rightarrow

Percapatan mobil A: $V_{ta} = v_0 + a \cdot t$

$$60 = V_{ta} = 0 + a(40)$$

$$a = \frac{60}{40} = 1,5 \text{ m/s}^2$$

(3) benar \rightarrow jarak = luas di bawah grafik.

$$\text{Jarak mobil A: } S = \text{luas} = \frac{1}{2} (40)(60) = 1200 \text{ m}$$

$$\text{atau: } S_A = \left(\frac{V_{0A} + V_t}{2} \right) t = \left(\frac{0 + 60}{2} \right) 40 = 1200 \text{ m}$$

Percapatan mobil B: $V_{tB} = v_0 + a \cdot t$

$$V_{tB} = 36 + a(40)$$

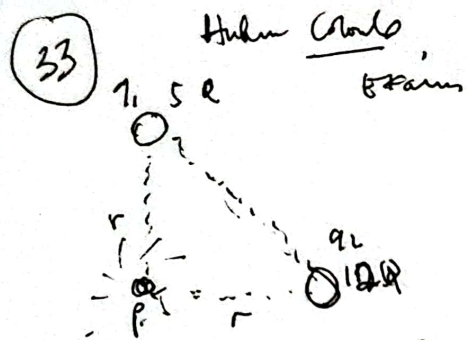
$$a = \frac{60 - 36}{40} = 0,6 \text{ m/s}^2$$

Jadi percepatan mobil A lebih ⁹⁰ besar dari B
 $1,5 \text{ m/s}^2 > 0,6 \text{ m/s}^2$

$$\text{Jarak mobil B: } S = \text{luas} = \frac{1}{2} (36 + 60)(40) = 1920 \text{ m}$$

(4) salah \rightarrow karena pada detik 40 tidak akan bertemu karena memiliki kecepatan yang berbeda.

Jawaban : (C) 2 dan 3



kuat medan listrik total di titik P \rightarrow

$$E = \sqrt{\left(k \frac{q_1}{r^2}\right)^2 + \left(k \frac{q_2}{r^2}\right)^2}$$

$$E = \sqrt{\left(k \frac{5q}{r^2}\right)^2 + \left(k \frac{12q}{r^2}\right)^2}$$

$$E = \sqrt{\left(k \frac{1}{r^2}\right)^2 + (5+12)^2}$$

$$E = \sqrt{\left(k \frac{1}{r^2}\right)^2 (25+144)}$$

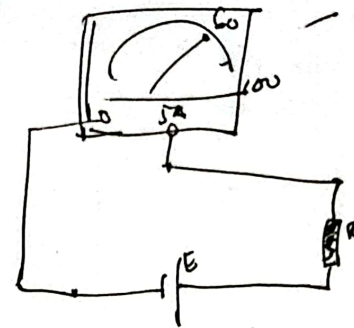
$$E = \sqrt{\left(k \frac{1}{r^2}\right)^2 (169)}$$

$$E = k \frac{1}{r^2} \sqrt{169}$$

$$E = \frac{13kq}{r^2}$$

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Ampere Meter Analog



Ampere Meter Analog

kuat arus yg terukur

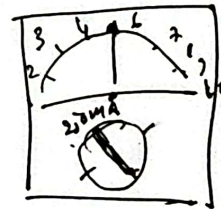
$$I = \frac{\text{nilai defleksi jarum}}{\text{nilai batas maksimum}} \times \text{skala analog}$$

$$I = \frac{60}{100} \times 5$$

$$I = \frac{300}{100}$$

$$I = 3 \text{ A}$$

Soal UN 2015 Paket 2. Exan.



Tentukan kuat arus,
dari alat ukur ini!

A. 500 mA

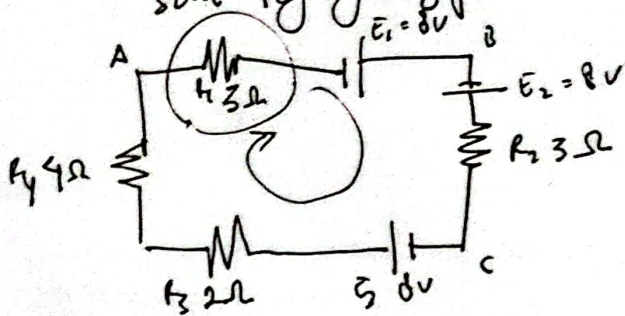
B. 225 mA

C. 100 mA

D. 125 mA

E. 50 mA

35) Hukum Kirchhoff II
Soal Tegangan Jarak



Besarnya tegangan jarak AB.....?

$$\sum \mathcal{E} + \sum IR = 0$$

$$-8 - 8 - 6 + I(3 + 3 + 2 + 4) = 0$$

$$-24 + 12I = 0$$

$$I = \frac{24}{12}$$

$$I = 2 \text{ A}$$

$$V = I \cdot R$$

$$V = 2 \cdot 3$$

$$V = 6 \text{ volt}$$

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