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PHYSICS

BY CHAPTER F4 & F5

F4 CH1: MEASUREMENT

COMPILATION OF **OBJECTIVE** QUESTIONS



**DREAM BIG
AIM HIGH
NEVER GIVE UP**

alinainanarif



TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

1 Antara yang berikut, yang manakah merupakan kuantiti skalar?
Which of the following is a scalar quantity?

- | | |
|-----------------------------------|--------------------------------------|
| A Panjang
<i>Length</i> | C Momentum
<i>Momentum</i> |
| B Daya
<i>Force</i> | D Berat
<i>Weight</i> |

2 Kuantiti fizik manakah merupakan kuantiti skalar?
Which physical quantity is a scalar quantity?

- | | |
|---------------------------------|---|
| A Jisim
<i>Mass</i> | C Halaju
<i>Velocity</i> |
| B Berat
<i>Weight</i> | D Pecutan
<i>Acceleration</i> |

3 Rajah 1 menunjukkan satu graf.
Diagram 1 shows a graph.

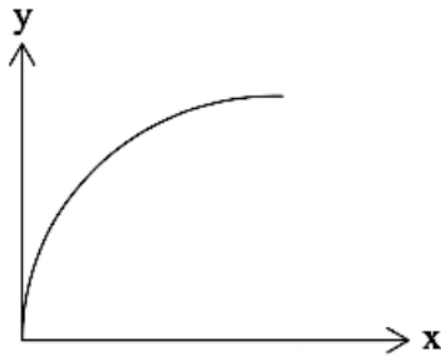


Diagram 1

Pernyataan yang manakah mewakili graf tersebut?
Which of the following statement presents the graph?

- A** y berkadar langsung dengan x
 y is directly proportional to x
- B** y bertambah secara tidak linear dengan x
 y increase non-linearly with x
- C** y bertambah secara linear dengan x
 y increase linearly with x
- D** y berkadar songsang dengan x
 y inversely proportional with x

- 4 Rajah 2 menunjukkan graf y melawan x .
Diagram 2 shows a graph y against x .

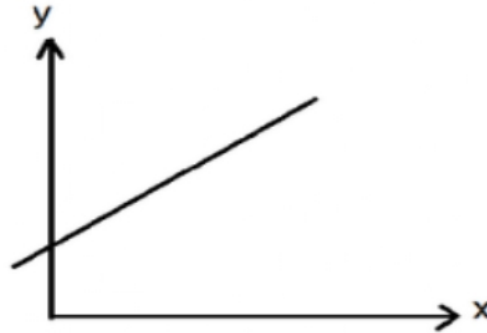


Diagram 2

Apakah hubungan bagi graf di atas?
What is the relationship for a graph above?

- A y berkadar langsung dengan x
 y is directly proportional to x
 - B y bertambah secara tidak linear dengan x
 y increase non-linearly with x
 - C** y bertambah secara linear dengan x
 y increase linearly with x
 - D y berkadar songsang dengan x
 y inversely propotional with x
- 5 Rajah 3 menunjukkan sebatang pembaris.
Diagram 3 shows a ruler.

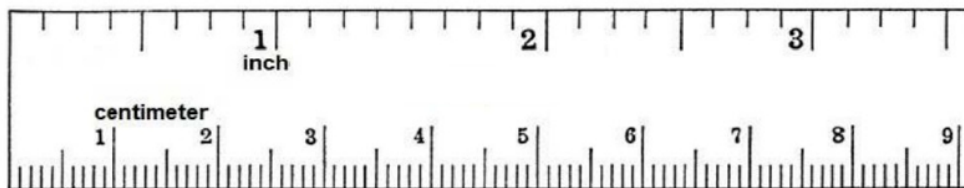


Diagram 3

Inci adalah contoh bagi
Inch is an example of

- A unit S.I.
S.I. unit
- B unit metrik
metric unit
- C unit China
Chinese unit
- D** unit imperial
imperial unit

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- 6 Antara berikut, manakah yang betul?
Which of the following is correct?

	Kuantiti terbitan <i>Derived quantity</i>	Sebutan dalam kuantiti asas <i>In terms of base quantities</i>
A	Ketumpatan <i>Density</i>	$\frac{m}{l^3}$
B	Pecutan <i>Acceleration</i>	$\frac{l}{t^2}$
C	Momentum <i>Momentum</i>	$\frac{ml}{t}$
D	Luas <i>Area</i>	l^2

- 7 Jadual 1 menunjukkan senarai unit kuantiti terbitan. Antara berikut pasangan manakah yang betul?
Table 1 shows a list of units of derived quantities. Which of the following pair is correct?

	Kuantiti Terbitan <i>Derived Quantities</i>	Unit <i>Units</i>
A	Momentum <i>Momentum</i>	$kg\ m^{-3}$
B	Tekanan <i>Pressure</i>	$N\ m^{-3}$
C	Kerja <i>Work</i>	$N\ m\ s^{-1}$
D	Daya <i>Force</i>	$kg\ m\ s^{-2}$

Table 1

- 8 Kuantiti fizik manakah yang sama dengan $\frac{\text{sesaran}}{\text{masa}}$?

Which physical quantity is equal to $\frac{\text{displacement}}{\text{time}}$?

- | | |
|------------------------------------|---|
| A Laju
<i>Speed</i> | C Jarak
<i>Distance</i> |
| B Halaju
<i>Velocity</i> | D Pecutan
<i>Acceleration</i> |

- 9 Graf dalam Rajah 4 menunjukkan hubungan antara s dan t .
Graph in Diagram 1 shows the relationship between s and t .

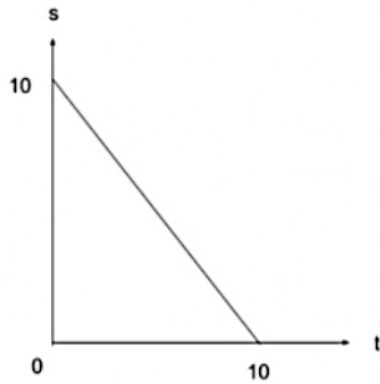


Diagram 4

Persamaan manakah yang mewakili hubungan antara s dan t ?
Which equation represent the relationship between s and t ?

- A $s = t + 10$ C $s = t - 10$
B $s = -t + 10$ D $s = -t - 10$
- 10 Rajah 5 menunjukkan dua orang kanak-kanak sedang bermain buaian yang berbeza panjang di taman permainan. Didapati bahawa tempoh ayunan bagi setiap buaian itu berbeza.
Diagram 5 shows two children playing on swings with different lengths at a playground. It is found that the period of oscillation for each swing is different.

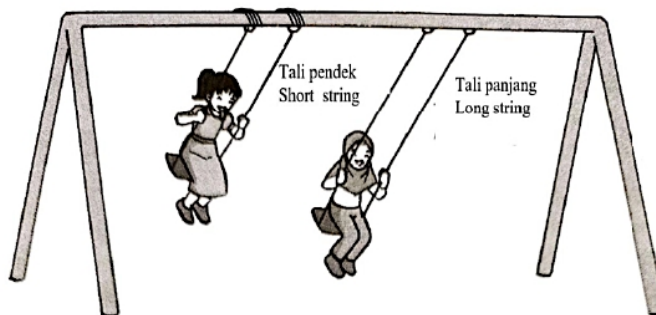


Diagram 5

Antara pernyataan berikut, yang manakah betul?

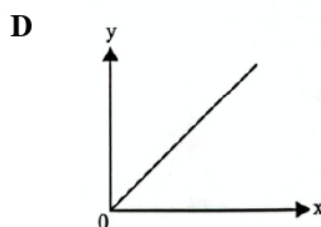
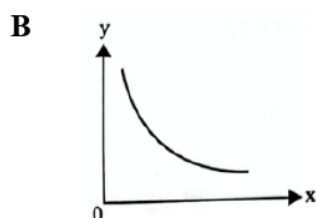
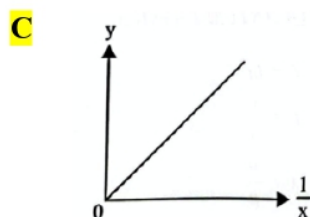
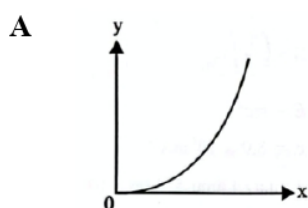
Which of the following statements is correct?

- A Panjang tali bertambah, tempoh ayunan berkurang
The length of string increases, period of oscillation decreases
- B** Panjang tali bertambah, tempoh ayunan bertambah
The length of string increases, period of oscillation increases
- C Panjang tali berkadar terus dengan tempoh ayunan
The length of string is directly proportional to the period of oscillation
- D Panjang tali berkadar songsang dengan tempoh ayunan
The length of string is inversely proportional to the period of oscillation

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- Mempunyai kecerunan positif
Has a positive gradient
- y berkadar songsang dengan x
 y inversely proportional to x

Graf manakah betul berdasarkan pernyataan di atas?
Which graph is correct on the statement above?



12 Rajah 6 menunjukkan maklumat tentang sebiji mentol yang dipaparkan di sebuah kedai lampu.
Diagram 6 shows information about a light bulb displayed in a light shop.



Voltan diperlukan <i>Voltage required</i>	240 V
Warna <i>Colour</i>	Putih <i>White</i>
Kuasa <i>Power</i>	40 W
Keamatan berluminositi <i>Luminous intensity</i>	7453 cd
Luas permukaan diterangi cahaya <i>Illuminated surface area</i>	0.88 m ²

Diagram 6

Manakah antara maklumat yang diberikan dalam Rajah 6 adalah kuantiti asas?
Which of the details given in Diagram 6 is a base quantity?

- | | |
|--|--|
| <p>A Kuasa
<i>Power</i></p> <p>B Voltan diperlukan
<i>Voltage required</i></p> | <p>C Keamatan berluminositi
<i>Luminous intensity</i></p> <p>D Luas permukaan diterangi cahaya
<i>Illuminated surface area</i></p> |
|--|--|

- 13 Rajah 7 menunjukkan graf R melawan $\frac{1}{A}$.
 Diagram 7 shows a graph of R against $\frac{1}{A}$.

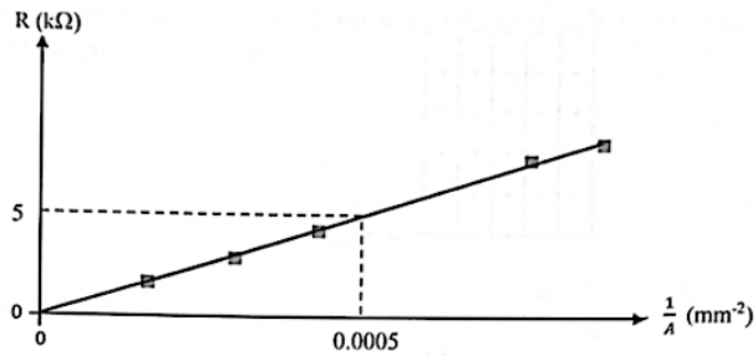


Diagram 7

Pernyataan manakah yang betul?

Which statement is correct?

- A R adalah berkadar terus dengan A
R is directly proportional to A
 - B R adalah berkadar songsang dengan melawan $\frac{1}{A}$
R is inversely proportional to melawan $\frac{1}{A}$
 - C** Unit bagi kecerunan graf adalah $\text{k}\Omega \text{ mm}^2$
Unit for gradient of the graph is $\text{k}\Omega \text{ mm}^2$
 - D Nilai bagi kecerunan diberikan oleh $\frac{0.0005}{5}$
The value of the gradient is given by $\frac{0.0005}{5}$
- 14 Antara yang berikut, yang manakah kuantiti vektor?
 Which of the following is a vector quantity?

- A Tenaga
Energy
- B Jisim
Mass
- C** Daya
Force
- D Laju
Speed

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

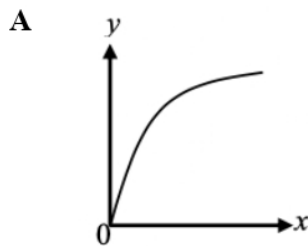
- 15 Terdapat tiga buah negara yang masih lagi menggunakan sistem imperial dalam pengukuran mereka sedangkan negara lain telah menggunakan sistem metrik. Negara tersebut ialah Amerika Syarikat, Liberia dan Myanmar.

Antara berikut kuantiti fizik yang manakah menunjukkan unit metrik dan unit imperial yang **betul**?
*There are three countries that still use the imperial system in their measurements while other countries have used the metric system. Those countries are the United States, Liberia and Myanmar. Which of the following physical quantities shows the **correct** metric and imperial units?*

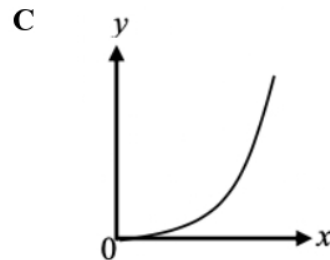
	Kuantiti fizik <i>Physical quantity</i>	Unit metrik <i>Metric unit</i>	Unit imperial <i>Imperial unit</i>
A	Suhu <i>Temperature</i>	Fahrenheit <i>Fahrenheit</i>	Celsius <i>Celsius</i>
B	Jisim <i>Mass</i>	Tan <i>Ton</i>	Pound <i>Pound</i>
C	Isipadu <i>Volume</i>	Liter <i>Litre</i>	Gelen <i>Gallon</i>
D	Panjang <i>Length</i>	Inci <i>Inchi</i>	Kaki <i>Foot</i>

- 16 Dalam kemahiran proses sains, salah satu kaedah menganalisis data ialah memplot graf. Melalui graf yang diplot kita dapat mentafsir graf untuk menentukan hubungan di antara dua pembolehubah. Antara berikut, yang manakah tafsiran yang **betul** bagi graf jenis lengkung?

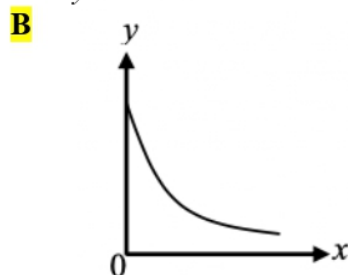
*In science process skills, one method of analysing data is plotting a graph. Through the graph plotted we can interpret the graph to determine the relationship between two variables. Which of the following is a **correct** interpretation of a curve type graph?*



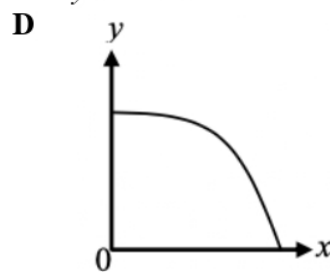
y berkurang dengan *x*
y is decrease with x



y berkurang dengan *x*
y is decrease with x



y berkurang dengan *x*
y is decrease with x



y bertambah dengan *x*
y is increase with x

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

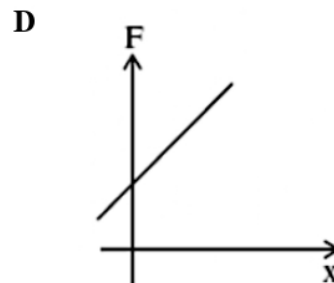
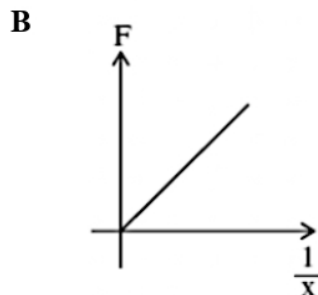
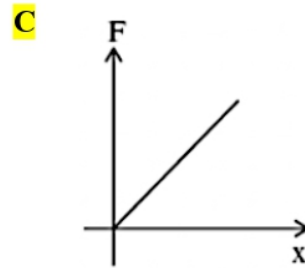
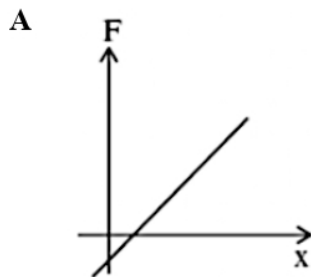
- 17 Antara pasangan berikut, manakah yang menunjukkan pasangan kuantiti asas dan kuantiti terbitan?

Which of the following pairs shows a basic quantity and derived quantity?

	Kuantiti asas <i>Basic quantity</i>	Kuantiti Terbitan <i>Derived Quantities</i>
A	Panjang / <i>Length</i>	Suhu / <i>Temperature</i>
B	Daya / <i>Force</i>	Masa / <i>Time</i>
C	Arus elektrik / <i>Electric current</i>	Momentum / <i>Momentum</i>
D	Laju / <i>Speed</i>	Halaju / <i>Velocity</i>

- 18 Antara graf berikut, yang manakah mematuhi persamaan $F = kx$, dengan keadaan k ialah pemalar?

Which of the following graphs obeys the equation $F = kx$, where k is a constant?



- 19 Manakah antara yang berikut adalah unit bagi kuantiti asas?

Which of the following is a unit for base quantity?

A Joule (J)

C Celsius ($^{\circ}\text{C}$)

B Newton (N)

D Ampere (A)

- 20 Antara berikut yang manakah **bukan** merupakan unit asas dalam sistem unit SI?

*Which of the following is **not** a base unit in the SI unit system?*

A saat / *second*

C centimeter / *centimetre*

B candela / *candela*

D mol / *mol*

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

- 21 Rajah 8 menunjukkan satu alat pengukuran sedang digunakan untuk mengukur satu kuantiti fizik.
Diagram 8 shows a measuring instrument being used to measure one physical quantity.



Diagram 8

Manakah antara pernyataan berikut benar?
Which of the following statement is true?

	Kuantiti fizik yang diukur <i>Physical quantity measured</i>	Jenis kuantiti fizik <i>Type of physical quantity</i>
A	Arus elektrik <i>Electric current</i>	Kuantiti asas dan kuantiti skalar <i>Base quantity and scalar quantity</i>
B	Keamatan beriluminositi <i>Luminous intensity</i>	Kuantiti terbitan dan kuantiti skalar <i>Derived quantity and base quantity</i>
C	Keamatan beriluminositi <i>Luminous intensity</i>	Kuantiti asas dan kuantiti scalar <i>Base quantity and scalar quantity</i>
D	Arus elektrik <i>Electric current</i>	Kuantiti asas dan kuantiti vektor <i>Base quantity and vector quantity</i>

- 22 Pasangan kuantiti manakah adalah benar?
Which pair of quantity is correct?

	Kuantiti skalar <i>Scalar quantity</i>	Kuantiti vektor <i>Vector quantity</i>
A	Mempunyai magnitud sahaja <i>Has magnitude only</i>	Mempunyai magnitud sahaja <i>Has magnitude only</i>
B	Mempunyai arah sahaja <i>Has direction only</i>	Mempunyai magnitud sahaja <i>Has magnitude only</i>
C	Mempunyai magnitud sahaja <i>Has magnitude only</i>	Mempunyai magnitud dan arah <i>Has magnitude and direction</i>
D	Mempunyai magnitud dan arah <i>Has magnitude and direction</i>	Mempunyai magnitud sahaja <i>Has magnitude only</i>

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

- 23 Manakah antara kuantiti skalar dan vektor berikut dipadankan dengan betul ?
Which of the following scalar and vector is matched correctly ?

	Skalar <i>Scalar</i>	Vektor <i>Vector</i>
A	Kerja <i>Work</i>	Kuasa <i>Power</i>
B	Separuh hayat <i>Half life</i>	Daya geseran <i>Friction force</i>
C	Tenaga keupayaan kenyal <i>Elastic potential energy</i>	Laju linear <i>Linear speed</i>
D	Berat <i>Weight</i>	Pecutan graviti <i>Gravitational acceleration</i>

- 24 Antara berikut yang manakah kesemuanya kuantiti asas?
Which of the following are all base quantities?

- A** Jisim, panjang, pecutan, masa, arus elektrik
Mass, length, acceleration, time, electric current
- B** Jisim, panjang, pecutan, suhu, keamatan berluminositi
Mass, length, acceleration, temperature, luminous intensity
- C** Jisim, panjang, arus elektrik, suhu termodinamik, keamatan berluminositi
Mass, length, electric current, thermodynamic temperature, luminous intensity
- D** Jisim, suhu, keamatan berluminositi, kuantiti bahan, ketumpatan
Mass, temperature, luminous intensity, amount of substance, density

- 25 Unit manakah yang merupakan satu unit terbitan?
Which unit is a derived unit?

- A** Voltage, V
Voltan, V
- B** Saat, s
Second, s
- C** Meter, m
Metre, m
- D** Kilogram, kg
Kilogram, kg

- 26 Rajah 9 menunjukkan hubungan antara kuantiti P dan Q.
Diagram 9 shows relationship between quantity P and Q.

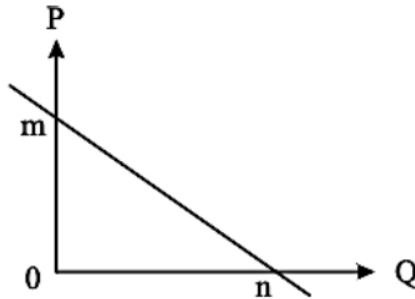


Diagram 9

Antara berikut yang manakah menunjukkan persamaan yang betul?
Which of the following equation is true based on the graph?

- A $P = \frac{n}{m} Q + m$ C $P = -\frac{n}{m} Q + m$
- B $P = \frac{m}{n} Q + m$ **D** $P = -\frac{m}{n} Q + m$
- 27 Rajah 10 menunjukkan graf u melawan $\frac{1}{v}$.
Diagram 10 shows a graph of u against $\frac{1}{v}$.

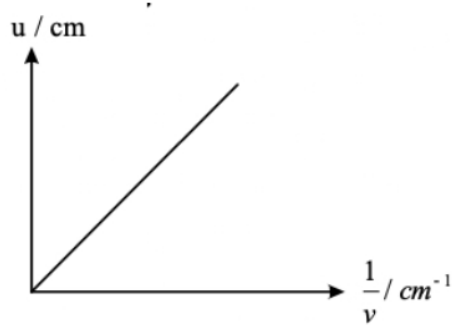


Diagram 10

Apakah yang berlaku pada u apabila v bertambah?
What happens to u when v increases?

- A Bertambah / Increase
- B** Berkurang / Decrease
- C Tidak berubah / Unchanged

- 28 Rajah 11 menunjukkan situasi di taman permainan.
Diagram 11 shows situation in a playground.



Diagram 11

Apakah pembolehubah dimanipulasikan dan pembolehubah bergerak balas yang sesuai?
What is the suitable manipulated variable and responding variable?

	Pembolehubah dimanipulasikan <i>Manipulated variable</i>	Pembolehubah bergerak balas <i>Responding variable</i>
A	Jisim ladung <i>Mass of bob</i>	Tempoh ayunan <i>Period of oscillation</i>
B	Panjang bandul <i>Length of pendulum</i>	Tempoh ayunan <i>Period of oscillation</i>
C	Kelajuan bandul <i>Speed of pendulum</i>	Panjang bandul <i>Length of pendulum</i>
D	Tempoh ayunan <i>Period of oscillation</i>	Kelajuan bandul <i>Speed of pendulum</i>

- 29 Suhu dan tenaga boleh dikelaskan sebagai
Temperature and energy can be classified as

- | | | | |
|---|--|----------|---|
| A | Kuantiti asas
<i>Base quantity</i> | C | Kuantiti skalar
<i>Scalar quantity</i> |
| B | Kuantiti terbitan
<i>Derived quantity</i> | D | Kuantiti vektor
<i>Vector quantity</i> |

- 30 Antara kuantiti berikut, yang manakah **bukan** kuantiti terbitan?
*Which of the following physical is **not** a derived quantity?*

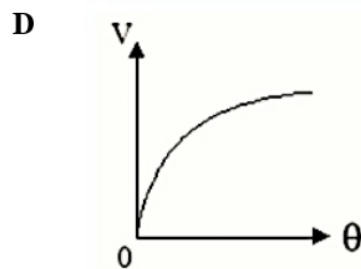
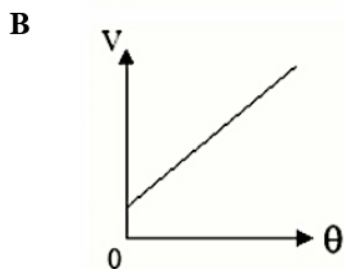
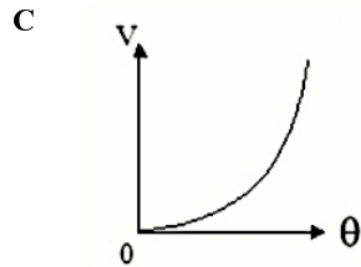
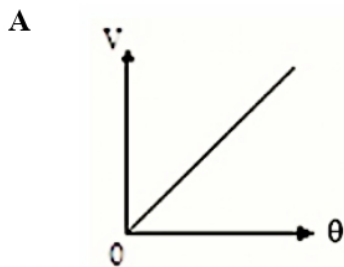
- | | | | |
|----------|------------------------------|---|---------------------------|
| A | Frekuensi / <i>Frequency</i> | C | Halaju / <i>Velocity</i> |
| B | Jisim / <i>Mass</i> | D | Tekanan / <i>Pressure</i> |

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

31 Pasangan manakah yang terdiri daripada kuantiti terbitan sahaja?
Which pair consist of only derived quantities?

- | | | | |
|---|---|----------|--|
| A | Jarak dan suhu
<i>Distance and temperature</i> | C | Masa dan halaju
<i>Time and velocity</i> |
| B | Jisim dan ketumpatan
<i>Mass and density</i> | D | Halaju dan cas
<i>Velocity and charge</i> |

32 Graf manakah menunjukkan hubungan V bertambah secara linear dengan θ ?
Which graph shows a relationship of V increasing linearly with θ ?



33 Antara berikut yang manakah adalah unit imperial?
Which of the following is the imperial unit?

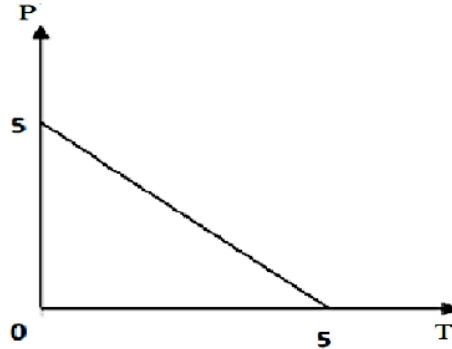
- | | | | |
|----------|--------------------|---|--------------------------|
| A | inci / <i>inch</i> | C | meter / <i>metre</i> |
| B | mol / <i>mole</i> | D | candela / <i>candela</i> |

34 Tempoh ayunan untuk suatu neraca inersia diberi oleh $T^2 = km$ di mana T ialah tempoh ayunan dan unit ialah s, m ialah jisim dan unitnya kg dan k ialah suatu pemalar. Apakah unit bagi k ?
Period of oscillation for an inertia balance is given by $T^2 = km$ where T is period of oscillation and its unit is s, m is mass and its unit is kg. k is a constant. What is the unit of k ?

- | | | | |
|---|-----------------|----------|--------------------------------|
| A | kg s^2 | C | $\text{kg}^{-1} \text{s}^2$ |
| B | kg s | D | $\text{kg}^{-2} \text{s}^{-1}$ |

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

- 35 Graf menunjukkan hubungan antara P dan T.
Graph shows the relationship between P and T.



Hubungan P dan T boleh diwakili oleh persamaan
Relationship between P and T can be represented by equation

- | | | | |
|----------|-------------|----------|--------------|
| A | $P = T + 5$ | C | $P = -T + 5$ |
| B | $P = T + 1$ | D | $P = -T + 1$ |

- 36 Daripada formula $p = mv$, pilih kuantiti skalar.
From the formula $p = mv$, choose the scalar quantity.

- A** p
B m
C v

- 37 Which measurement is the longest?
Ukuran manakah yang paling panjang?

- | | | | |
|----------|----------------------------------|----------|----------------------------------|
| A | $2.53 \times 10^2 \text{ nm}$ | C | $2.53 \times 10^{-3} \text{ cm}$ |
| B | $2.53 \times 10^{-5} \text{ km}$ | D | $2.53 \times 10^{-2} \text{ dm}$ |

- 38 Kuasa yang dihasilkan oleh sebuah stesen janakuasa ialah 45 MW.
 Berapakah kuasa ini dalam bentuk piawai?
*The power generated by a power station is 45 MW.
 What is the power in standard form?*

- | | | | |
|----------|-----------------------------|----------|----------------------------|
| A | $4.5 \times 10^6 \text{ W}$ | C | $45 \times 10^6 \text{ W}$ |
| B | $4.5 \times 10^7 \text{ W}$ | D | $45 \times 10^7 \text{ W}$ |

TING. 4: BAB 1 PENGUKURAN (MEASUREMENT)

- 39 Yang manakah antara alat pengukur berikut **tidak** mengukur kuantiti asas?
*Which of the following measuring instruments **do not** measures a base quantity?*

A



C



B



D



- 40 Rajah 12 menunjukkan seorang budak lelaki dan pakciknya, masing-masing duduk di atas dua bola pantai yang serupa.
Diagram 12 shows a boy and his uncle sitting on two identical beach balls.

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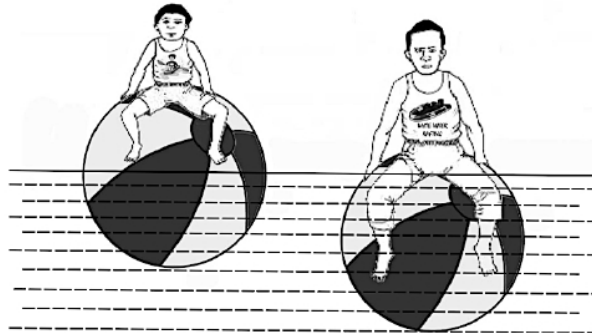


Diagram 12

Hipotesis manakah yang boleh dibuat daripada situasi tersebut?

Which hypothesis can be made from the situation?

- A Kedalaman bola tenggelam bergantung kepada jumlah jisim
The depth of ball immersed depends on the total mass
- B Semakin kecil jumlah jisim, semakin dalam bola tenggelam
The smaller the total mass, the deeper the ball immersed
- C Isipadu air tersesar dipengaruhi oleh jumlah jisim
The volume of water displaced is affected by the total mass
- D** Kedalaman bola yang tenggelam bertambah apabila jumlah jisim bertambah
The depth of ball immersed increases when the total mass increases

The best way to predict the FUTURE is to CREATE it. Peter Drucker