1 Diberi bahawa P berubah secara langsung dengan kuasa dua Q dan secara songsang dengan punca kuasa dua S. Cari hubungan antara P, Q dan S.
It is given that P varies directly as the square of Q and inversely as the square root of S. Find the relation between P, Q and S.

A $P \propto \frac{Q^2}{\sqrt{S}}$ **C** $P \propto \frac{S^2}{\sqrt{Q}}$

B $P \propto \frac{\sqrt{Q}}{S^2}$ **D** $P \propto \frac{\sqrt{S}}{Q^2}$

2 Diberi bahawa $y \propto x$ dan $x = 3z - 1$. Jika $y = 6$ apabila $z = 3$, hitung nilai z apabila $y = 15$. / *It is given that $y \propto x$ and $x = 3z - 1$. If $y = 6$ when $z = 3$, calculate the value of z when $y = 15$.*

A 6 **C** 9
B 7 **D** 18

3 P berubah secara langsung dengan kuasa dua Q dan secara songsang dengan R. Diberi bahawa $P = 40$ apabila $Q = 4$ dan $R = 2$. Hitung nilai P apabila $Q = 6$ dan $R = 4$. / *P varies directly as the square of Q and inversely as R. Given that $P = 40$ when $Q = 4$ and $R = 2$. Calculate the value of P when $Q = 6$ and $R = 4$.*

A 45 **C** 15
B 30 **D** 9

4 Jadual 1 menunjukkan hubungan antara tiga pemboleh ubah, w, t dan h.
Table 1 shows the relationship between three variables, w, t and h.

w	t	h
2	2	4
4	m	9

Jadual 1 / *Table 1*

Diberi bahawa $w \propto \frac{t}{\sqrt{h}}$, hitung nilai m.
Given that $w \propto \frac{t}{\sqrt{h}}$, calculate the value of m.

A 3 **C** 12
B 6 **D** 18

5 Jadual 2 menunjukkan nilai-nilai pemboleh ubah t, u dan v. / *Table 2 shows the values of the variables t, u and v.*

t	$\frac{2}{3}$	$\frac{2}{5}$
u	3	m
v	9	25

Jadual 2 / *Table 2*

Diberi bahawa $t \propto \frac{1}{u\sqrt{v}}$, hitung nilai m.
Given that $t \propto \frac{1}{u\sqrt{v}}$, calculate the value of m.

A 2 **C** 18
B 3 **D** 25

6 Diberi bahawa $y \propto \frac{1}{(x+2)^n}$ dan $y = \frac{1}{2}$ apabila $n = 2$ dan $x = 2$. Cari nilai n apabila $y = 1$ dan $x = 6$.
It is given that $y \propto \frac{1}{(x+2)^n}$ and $y = \frac{1}{2}$ when $n = 2$ and $x = 2$. Find the value of n when $y = 1$ and $x = 6$.

A $\frac{1}{8}$ **C** 1
B $\frac{1}{2}$ **D** 2

7 Diberi bahawa m berubah secara songsang dengan punca kuasa tiga n dan $m = 4$ apabila $n = \frac{1}{8}$, ungkapkan m dalam sebutan n. / *Given that m varies inversely as the cube root of n and $m = 4$ when $n = \frac{1}{8}$, express m in terms of n.*

A $m = 2\sqrt[3]{n}$ **C** $m = \frac{2}{\sqrt[3]{n}}$
B $m = \frac{1}{\sqrt[3]{2n}}$ **D** $m = \frac{1}{\sqrt[3]{n}}$

8 Diberi bahawa P berubah secara songsang dengan kuasa dua Q dan $P = 18$ apabila $Q = \frac{1}{3}$. Ungkapkan P dalam sebutan Q. / *It is given that P varies inversely as the square of Q and $P = 18$ when $Q = \frac{1}{3}$. Express P in terms of Q.*

A $P = \frac{2}{Q^2}$ **C** $P = \frac{18}{Q^2}$
B $P = \frac{8}{Q^2}$ **D** $P = \frac{72}{Q^2}$

9 Diberi bahawa n berubah secara songsang dengan m^3 dan $n = 12$ apabila $m = \frac{1}{2}$. Hitung nilai n apabila $m = \frac{3}{2}$. / *It is given that n varies inversely as m^3 and $n = 12$ when $m = \frac{1}{2}$. Calculate the value of n when $m = \frac{3}{2}$.*

A $\frac{1}{32}$ **C** $\frac{3}{2}$
B $\frac{4}{27}$ **D** $\frac{4}{9}$

10 Diberi bahawa x berubah secara songsang dengan punca kuasa dua y dan $x = \frac{1}{2}$ apabila $y = 36$. Ungkapkan x dalam sebutan y.
It is given that x varies inversely as the square root of y and $x = \frac{1}{2}$ when $y = 36$. Express x in terms of y.

A $x = \frac{4}{\sqrt{y}}$ **C** $x = \frac{2}{\sqrt{y}}$
B $x = \frac{3}{\sqrt{y}}$ **D** $x = \frac{1}{\sqrt{y}}$

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11 Jadual 3 menunjukkan nilai-nilai pemboleh ubah u, v dan w yang memuaskan hubungan $u \propto v\sqrt{w}$.
Table 3 shows the values of the variables u, v and w which satisfy the relationship $u \propto v\sqrt{w}$.

u	8	32
v	$\frac{1}{3}$	x
w	36	4

Jadual 3 / *Table 3*

Hitung nilai x.
Calculate the value of x.

A 10 **C** 6
B 8 **D** 4

12 Diberi bahawa x berubah secara langsung dengan y dan secara songsang dengan punca kuasa dua z dan $x = 2$ apabila $y = 10$ dan $z = 100$. Hitung nilai z apabila $x = 2$ dan $y = 4$.
It is given that x varies directly as y and inversely as the square root of z and x = 2 when y = 10 and z = 100. Calculate the value of z when x = 2 and y = 4.

A 2 **C** 8
B 5 **D** 16

13 Diberi bahawa p berubah secara langsung dengan q dan $p = 9$ apabila $q = 12$. Ungkapkan p dalam sebutan q.
It is given that p varies directly as q and p = 9 when q = 12. Express p in terms of q.

A $p = 3q$ **C** $p = \frac{3q}{4}$
B $p = \frac{q}{3}$ **D** $p = \frac{4q}{3}$

14 Diberi bahawa y berubah secara songsang dengan kuasa dua x dan $y = 3$ apabila $x = 2$. Hitung nilai y apabila $x = 6$.
It is given that y varies inversely as the square of x and y = 3 when x = 2. Calculate the value of y when x = 6.

A $\frac{1}{3}$ **C** $\frac{2}{3}$
B $\frac{1}{6}$ **D** $\frac{3}{2}$

15 Hubungan antara F, g dan h ialah $F \propto \frac{g}{h^2}$. Diberi bahawa $F = 1$ apabila $g = 6$ dan $h = 2$. Hitung nilai g apabila $F = 3$ dan $h = 4$.
The relation between F, g and h is $F \propto \frac{g}{h^2}$. It is given that F = 1 when g = 6 and h = 2. Calculate the value of g when F = 3 and h = 4.

A 72 **C** 36
B 64 **D** 32

16 Antara berikut, jadual yang manakah mewakili $y \propto x^3$?
Which of the following tables represent $y \propto x^3$?

A

x	1	2	5
y	1	9	115

B

x	2	3	7
y	9	18	98

C

x	1	3	5
y	2	54	250

D

x	2	3	5
y	12	27	75

17 Diberi bahawa K berubah secara songsang dengan punca kuasa tiga L dan $K = 1$ apabila $L = 8$. Hitung nilai L apabila $K = 3$.
It is given that K varies inversely as the cube root of L and K = 1 when L = 8. Calculate the value of L when K = 3.

A $\frac{27}{8}$ **C** $\frac{8}{9}$
B $\frac{2}{3}$ **D** $\frac{8}{27}$

18 Diberi bahawa $\frac{yz}{x^2} = 3$ dengan keadaan 3 adalah pemalar. Pernyataan mana adalah benar?
It is given that $\frac{yz}{x^2} = 3$, where 3 is a constant. Which statement is true?

A y berubah secara langsung dengan kuasa dua x dan secara songsang dengan z.
y varies directly as the square of x and inversely as z.

B y berubah secara langsung dengan z dan secara songsang dengan kuasa dua x.
y varies directly as z and inversely as the square of x.

C y berubah secara songsang dengan kuasa dua x dan secara langsung dengan z.
y varies inversely as the square of x and directly as z.

D y berubah secara songsang dengan kuasa dua z dan secara langsung dengan kuasa dua x.
y varies inversely as the square of z and directly as the square of x.

19 Isi padu sebiji belon, V cm^3, adalah berubah secara langsung dengan kuasa tiga jejarinya, r. Dengan menggunakan k sebagai pemalar, ungkapkan k dalam sebutan V dan r.
The volume of a balloon, V cm^3, varies directly as the cube of the radius, r. Using k as a constant, express k in terms of V and r.

A $k = Vr^{\frac{1}{3}}$ **C** $k = Vr^3$
B $k = \frac{V}{r^{\frac{1}{3}}}$ **D** $k = \frac{V}{r^3}$.

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