1. Round off 21.627 correct to three significant figures.

Bundarkan 21.627 *betul kepada tiga angka bererti.*

A 21.6

B 21.63

C 21.62

D 21.620

2. Express 0.00007489 in standard form.

Ungkapkan 0.00007489 *dalam bentuk piawai* .

A 7.489×10^{-5}

B 7.489×10^{-6}

C 7.489×10^{5}

D 7.489×10^{6}

3. $2.3 \times 10^{6} + 9.5 \times 10^{8} =$

A 9.523×10^{8}

B 1.18×10^{8}

C 9.523×10^{6}

D 1.18×10^{6}

4. Diagram 1 shows an empty tank, which is a cylinder,with diameter 500 cm and height 800 cm.

Rajah 1 *menunjukkan sebuah tangki kosong berbentuk silinder berdiameter* 500 *cm dengan ketinggian* 800 *cm.*

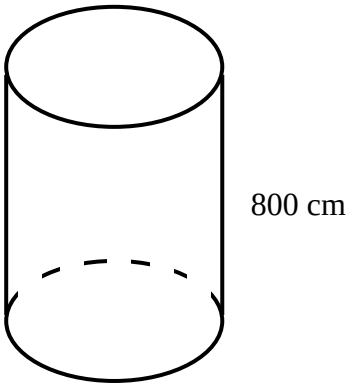


Diagram 1
Rajah 1

A worker fills up 75% of the tank with water.

Calculate the volume, in cm^3,of water in the tank. (Use $\pi = 3.142$)

Seorang pekerja memasukkan air ke dalam tangki itu sehingga 75% *penuh.*

Hitung isipadu, dalam cm^3*, air dalam tangki itu.* (*Guna* $\pi = 3.142$)

A 3.93×10^{7}

B 1.18×10^{8}

C 1.57×10^{8}

D 4.71×10^{8}

5. State the value of digit 2, in base 10 in the number 3200_5

Nyatakan nilai digit 2, *dalam asas* 10 *bagi nombor* 3200_5

A 24

B 50

C 104

D 256

6. $101010_2 - 1011_2 =$

A 11110_2

B 11111_2

C 10110_2

D 11001_2

7 In diagram 2, *ABCDEF* is a regular hexagon and *CLMNE* is a regular pentagon.
Dalam rajah 2, *ABCDEF ialah sebuah heksagon sekata dan CLMNE ialah sebuah pentagon sekata.*

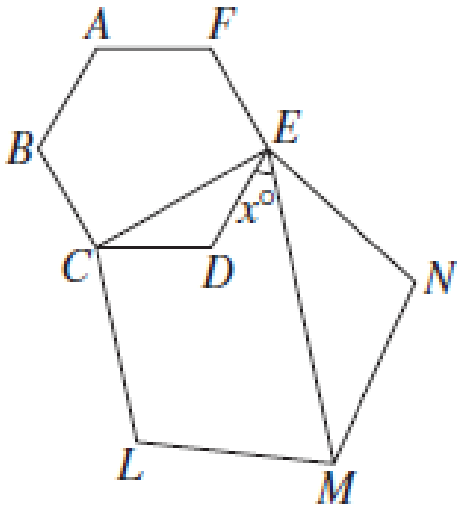


Diagram 2

Rajah 2

Find the value of *x*.

Cari nilai x.

A 36

B 39

C 42

D 78

8 In Diagram 3, *TUV* is an isosceles triangle. *PVU* is a straight line.
Dalam Rajah 3 , *TUV ialah segi tiga sama kaki. PVU ialah garis lurus.*

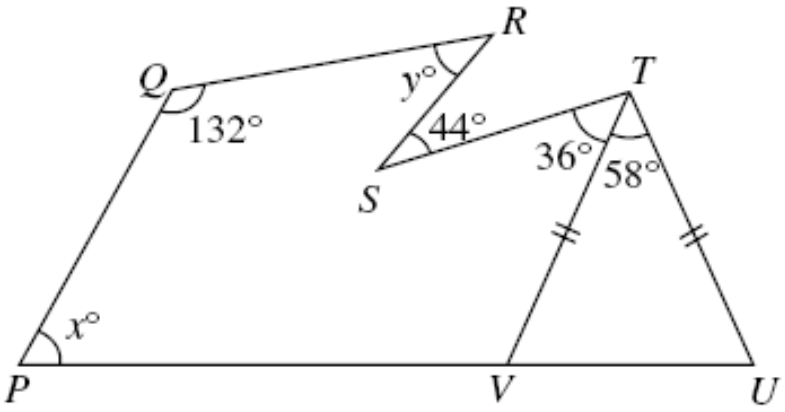


Diagram 3
Rajah 3

Calculate the value of $x + y$.
Hitung nilai $x + y$.

A 105
B 109
C 114
D 117

9 In diagram 4, *PQRS* is a common tangent to two circles with centres *O* and *M*. *RTU* is tangent to the circle with centre *O* at *T*.

Dalam rajah 4, *PQRS ialah tangen sepunya kepada dua bulatan berpusat O dan M. RTU ialah tangen kepada bulatan berpusat O di T.*

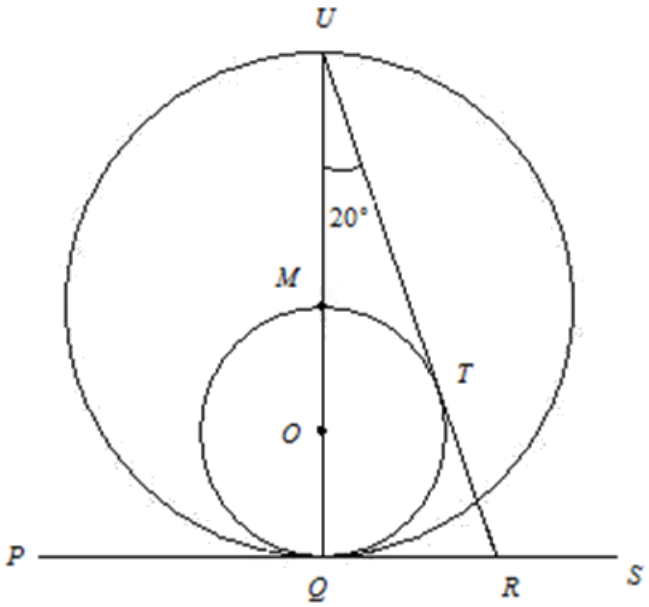


Diagram 4

Rajah 4

It is given that *UR* = 8.51 cm.

Find the length, in cm, of the radius *OQ*.

Diberi bahawa UR = 8.51 cm.

Cari panjang, dalam cm, *jejari OQ.*

A 2

B 3

C 4

D 8

10 Diagram 5 shows five objects, *F*, **A**, **B**, **C** and **D**, drawn on a Cartesian plane.
Rajah 5 *menunjukkan lima objek*, *F*, **A**, **B**, **C** *dan* **D**, *dilukis pada satah Cartes*.

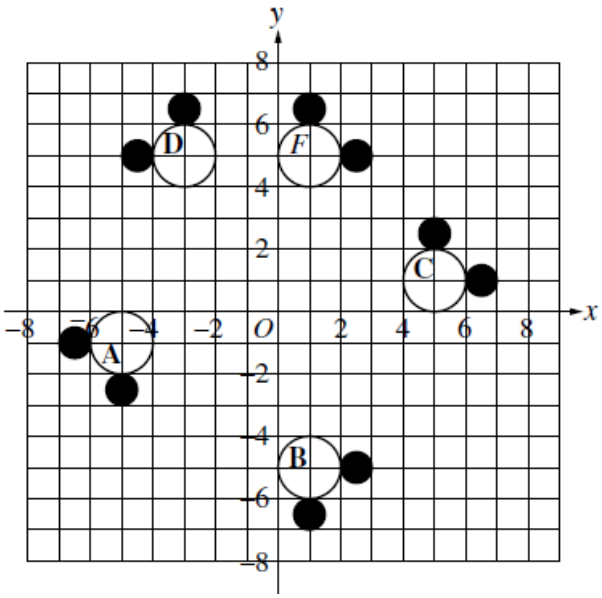


Diagram 5
Rajah 5

Which of the objects, **A**, **B**, **C** or **D**, is the image of object *F* under a reflection in the line $y = -x$?
Antara objek **A**, **B**, **C** *dan* **D**, *yang manakah imej bagi objek F di bawah pantulan pada garis* $y = -x$?

11 Diagram 6 is drawn on a grid of equal squares. Triangle II is the image of triangle I under a certain enlargement.

Rajah 6 *dilukis pada grid segi empat sama. Segi tiga* II *ialah imej bagi segi tiga* I *di bawah suatu pembesaran tertentu.*

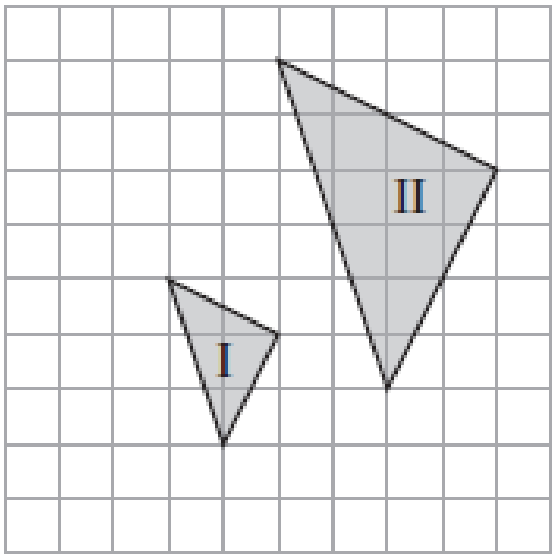


Diagram 6

Rajah 6

Given the area of triangle II is 108 cm^2. The area, in cm^2, of triangle I is

Diberi luas segi tiga II *ialah* 108 cm^2. *Luas, dalam* cm^2, *segi tiga* I *ialah*

A 14

B 27

C 36

D 54

12 Diagram 7 shows the graph of $y = \cos x°$.

Rajah 7 menunjukkan graf bagi $y = \text{kos } x°$.

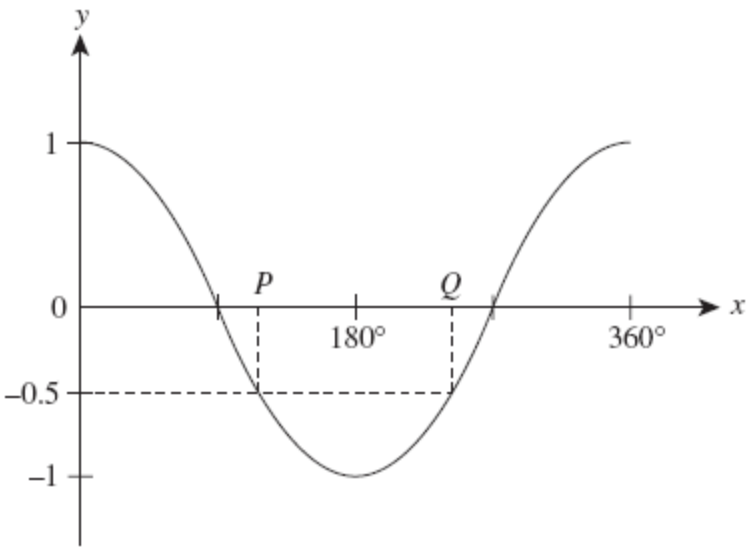


Diagram 7

Rajah 7

Find the values of P and Q.

Cari nilai P dan nilai Q.

A $P = 120°$, $Q = 210°$

B $P = 120°$, $Q = 240°$

C $P = 150°$, $Q = 210°$

D $P = 150°$, $Q = 240°$

13 In diagram 8, *PQRS* is a straight line.

Dalam rajah 8, PQRS ialah garis lurus.

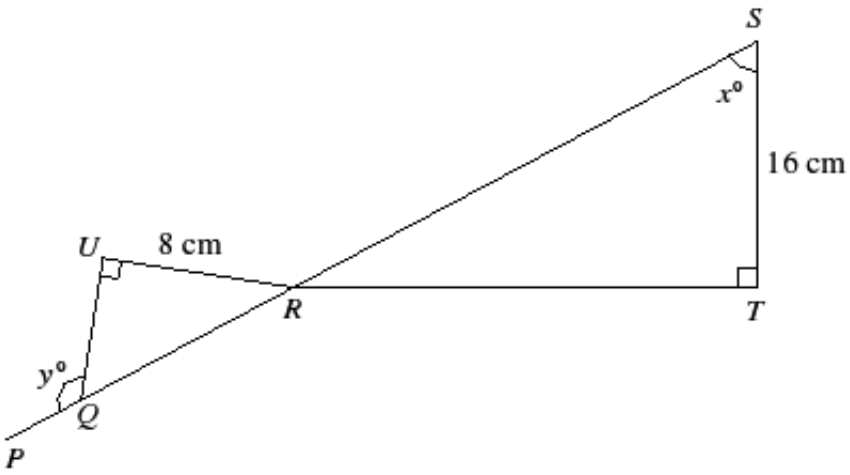


Diagram 8

Rajah 8

Given tan $x° = \frac{15}{8}$ and cos $y° = -\frac{3}{5}$, find the length, in cm, of *QRS*.

Diberi tan $x° = \frac{15}{8}$ *dan* kos $y° = -\frac{3}{5}$, *cari panjang, dalam* cm , *bagi QRS.*

A 34

B 38

C 40

D 44

14 Diagram 9 shows a right prism with a horizontal rectangular base *PQRS*. The right-angled triangle *PQT* is the uniform cross section of the prism. *M* and *N* are the midpoints of *TU* and *PS* respectively.

Rajah 9 *di bawah menunjukkan sebuah prisma tegak dengan tapak mengufuk berbentuk segi empat tepat PQRS. Segi tiga bersudut tegak PQT ialah keratan rentas seragam bagi prisma itu. M dan N masing-masing ialah titik tengah bagi TU dan PS.*

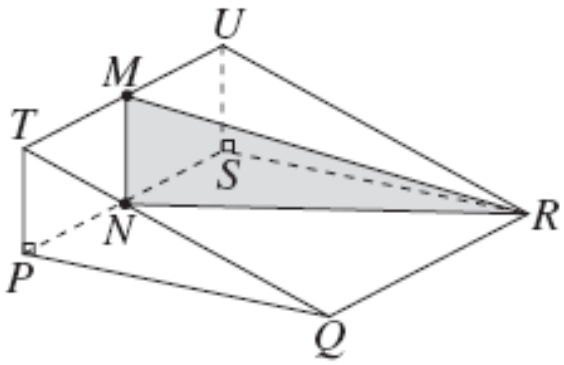


Diagram 9

Rajah 9

The angle between the plane *RMN* and the plane *PSUT* is

Sudut di antara satah RMN dengan satah PSUT ialah

A $\angle RNS$

B $\angle RMU$

C $\angle SNU$

D $\angle SNM$

15 Diagram 10 shows two vertical poles, *TV* and *PQR*, on a horizontal plane.

Rajah 10 *di bawah menunjukkan dua tiang tegak, TV dan PQR, pada satah mengufuk.*

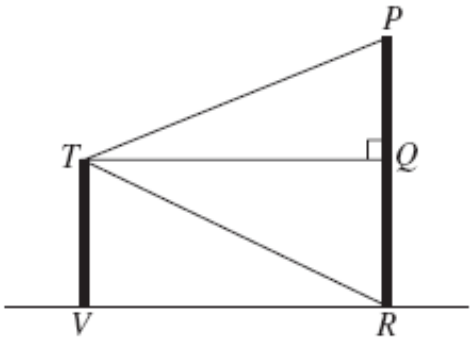


Diagram 10

Rajah 10

The angle of depression of *R* from *T* is

Sudut tunduk R dari T ialah

A $\angle PTQ$

B $\angle PTR$

C $\angle QRT$

D $\angle QTR$

16 Diagram 11 shows that *Q*, *R* and *S* are three points on a horizontal plane. *P* is vertically above *Q*.

Rajah 11 *menunjukkan Q, R dan S ialah tiga titik yang terletak di atas tanah mengufuk. P berada tegak di atas Q.*

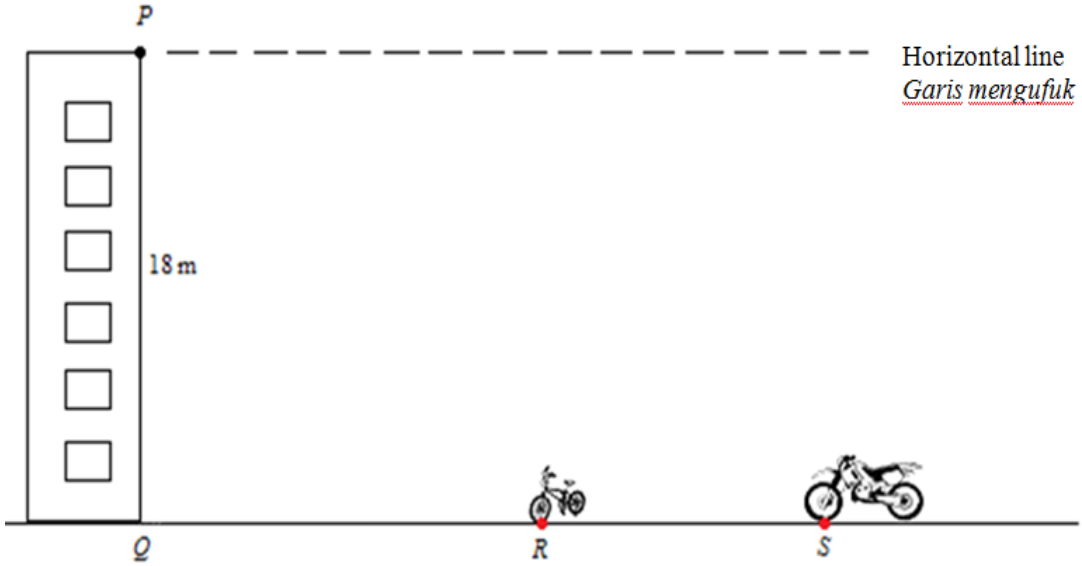


Diagram 11

Rajah 11

The angles of depression of *S* and *R* from *P* are 30° and 45° respectively.

Calculate the distance, in m, between the bicycle and the motocycle.

Sudut tunduk S dan R dari P ialah masing-masing 30° *dan* 45°.

Hitung jarak, dalam m, *di antara basikal dengan motosikal.*

A 13.18

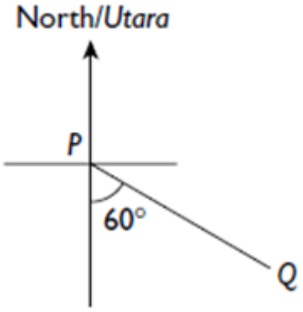
B 18

C 20

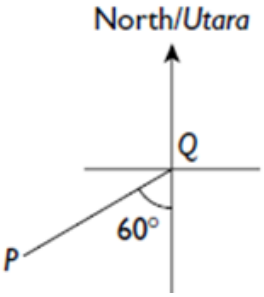
D 31.18

17 Points *P* and *Q* lie on a horizontal plane. The bearing of *P* from *Q* is 120°.
Which of the following diagrams shows the positions of *P* and *Q*?
Titik P dan titik Q terletak pada suatu satah mengufuk. Bearing P dari Q ialah 120°.
Antara rajah berikut, yang manakah menunjukkan kedudukan P dan Q?

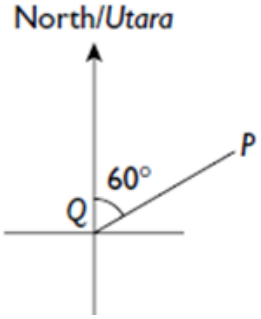
A



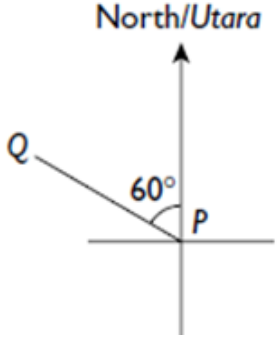
B



C



D



18 Diagram 12 shows the positions of five towns, **A**, **B**, **C**, **D** and *X*, on the surface of the earth.
Rajah 12 *menunjukkan kedudukan lima bandar,* **A**, **B**, **C**, **D** *dan X, pada permukaan bumi.*

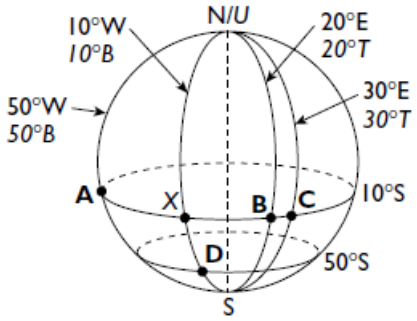


Diagram 12
Rajah 12

Which of the towns, **A**, **B**, **C** or **D**, is located east of *X* with a difference in longitude of 40°?
Antara bandar **A**, **B**, **C** *dan* **D**, *yang manakah berada di timur X dengan beza longitud* 40°?

19 Express $\frac{w-5}{w} - \frac{3(7-w)}{w^2}$ as a single fraction in its simplest form.
Ungkapkan $\frac{w-5}{w} - \frac{3(7-w)}{w^2}$ *sebagai satu pecahan tunggal dalam bentuk termudah.*

A $\frac{w^2-2w-21}{w^2}$

B $\frac{w^2-8w-21}{w^2}$

C $\frac{w^2-8w+21}{w^2}$

D $\frac{w^2-2w-26}{w^2}$

20 $(3k^2 + 3k - kp - p) \times \frac{1}{2(3k-p)} =$

A $k - 1$

B $k + 1$

C $\frac{k-1}{2}$

D $\frac{k+1}{2}$

21 Given $v\left(\sqrt{w}-3\right)=v-2\sqrt{w}$, then w =

Diberi $v\left(\sqrt{w}-3\right)=v-2\sqrt{w}$, *maka* w =

A $\frac{v^2-9}{v^2-4}$

B $\frac{4v}{(v+2)^2}$

C $\left(\frac{v-3}{v-2}\right)^2$

D $\left(\frac{4v}{v+2}\right)^2$

22 Given $\frac{p+7}{3}-(1-p)=8$, calculate the value of p.

Diberi $\frac{p+7}{3}-(1-p)=8$, *hitung nilai p.*

A 3

B 5

C 6

D 8

23 $\sqrt[3]{\left(\frac{5}{9}\right)^{-2}}$ =

A $\left(\frac{5}{9}\right)^{-\frac{3}{2}}$

B $\left(\frac{5}{9}\right)^{-\frac{2}{3}}$

C $\left(\frac{9}{5}\right)^{\frac{2}{3}}$

D $\left(\frac{9}{5}\right)^{\frac{3}{2}}$

24 Simplify :

Permudahkan :

$$\frac{64a^{-3}}{(4b)^2} \times \left(\frac{4ab}{16}\right)^{-2}$$

A $\frac{256}{a^5b^4}$

B $\frac{64}{a^5b^4}$

C $\frac{256}{a^2b^4}$

D $\frac{64}{a^2b^4}$

25 List all the integers *x* that satisfy the inequalities $x > -3$ and $\frac{x}{3} + 1 \leq 2$

Senaraikan semua integer x yang memuaskan ketaksamaan $x > -3$ dan $\frac{x}{3} + 1 \leq 2$

A -2, -1, 0

B -2, -1, 0, 1, 2

C -2, -1, 0, 1, 2, 3

D -2, -1, 0, 1, 2, 3, 4

26 Diagram 13 shows a rectangle *KLMN*.

Rajah 13 *menunjukkan sebuah segi empat tepat KLMN.*

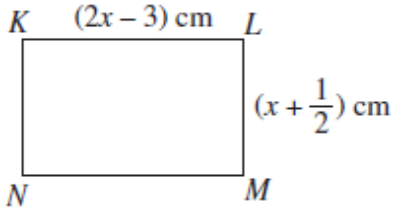


Diagram 13

Rajah 13

Given that the perimeter of *KLMN* is more than 19 cm, then the solution for *x* is

Diberi bahawa perimeter KLMN adalah lebih daripada 19 cm, *maka penyelesaian bagi x ialah*

A $x > 2$

B $x \geq 2$

C $x > 4$

D $x \geq 4$

27 Table 1 shows the points obtained by a group of participants in a quiz.

Jadual 1 *menunjukkan mata yang diperoleh sekumpulan peserta dalam suatu kuiz*.

Points ***Mata***	1	2	3	4	5	6
Number of partipants ***Bilangan peserta***	8	6	10	16	9	7

Table 1

Jadual 1

The number of participants who obtain points less than the mode point is

Bilangan peserta yang mendapat mata kurang daripada mata mod ialah

A 10

B 16

C 24

D 32

28 Table 2 below shows the heights of a group of students.

Jadual 2 *di bawah menunjukkan ketinggian sekumpulan pelajar.*

Height (cm) ***Tinggi (*cm*)***	**Number of students** ***Bilangan pelajar***
145	4
150	*x*
155	8
160	2
165	3
170	1

Table 2

Jadual 2

If the mean height of the students is 154.2 cm, find the value of *x*.

Jika min tinggi pelajar ialah 154.2 cm, *cari nilai x.*

A 5

B 6

C 7

D 9

29 Diagram 14 shows the sketch of the graph $y = 2x^3 + 16$.

Rajah 14 *menunjukkan lakaran graf* $y = 2x^3 + 16$.

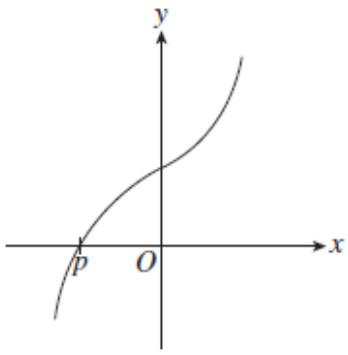


Diagram 14

Rajah 14

Find the value of *p.*

Cari nilai p.

A 16

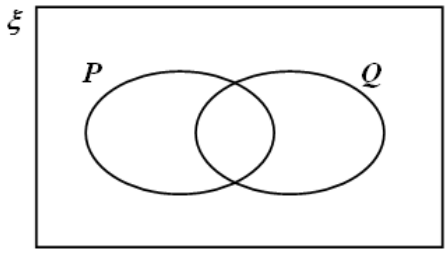
B 8

C -2

D -8

30 In the Venn diagram, ξ = {Form 3 students}, P = {students who play football} and Q = {students who play volleyball}.

Dalam gambar rajah Venn di bawah, ξ = {*pelajar Tingkatan* 3}, P = {*pelajar yang bermain bola sepak*} *dan* Q = {*pelajar yang bermain bola tampar*}.



Given $n(\xi) = 36$, $n(P) = 24$, $n(Q) = 15$ and $n(P \cap Q) = 9$, find the number of students who do not play the two games.

Diberi $n(\xi) = 36$, $n(P) = 24$, $n(Q) = 15$ *dan* $n(P \cap Q) = 9$, *cari bilangan pelajar yang tidak bermain dua permainan itu.*

A 5

B 6

C 8

D 9

31 Diagram 15 is a Venn diagram showing the number of elements of sets P, Q and R.

Rajah 15 *ialah gambar rajah Venn yang menunjukkan bilangan unsur bagi set* P, Q *dan* R.

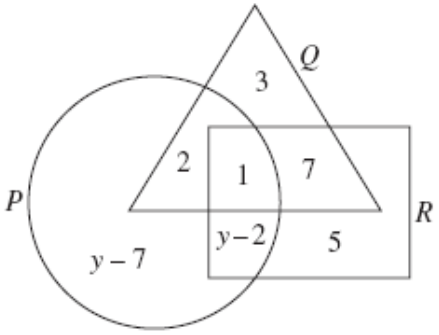


Diagram 15

Rajah 15

It is given that the universal set, $\xi = P \cup Q \cup R$ and $n(R') = n(Q \cap R)$. Find the value of y.

Diberi bahawa set semesta, $\xi = P \cup Q \cup R$ *dan* $n(R') = n(Q \cap R)$. *Cari nilai* y.

A 9

B 10

C 11

D 12

32 Diagram 16 shows four straight lines *OP*, *OQ*, *OR* and *OS* on a Cartesian plane.
Rajah 16 *menunjukkan empat garis lurus OP, OQ, OR dan OS pada suatu satah Cartes.*

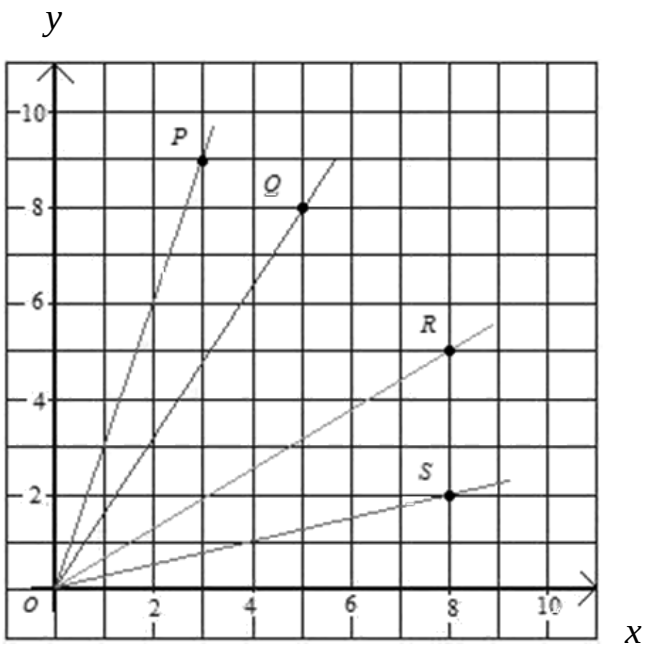


Diagram 16
Rajah 16

Which of the following statements is **not** true?
Antara pernyataan berikut, yang manakah **tidak** *benar*?

A *OP* has the largest value of gradient and the steepest slope.
OP mempunyai nilai kecerunan yang terbesar dan cerun yang tercuram.

B *OS* has the smallest value of gradient and the gentlest slope.
OS mempunyai nilai kecerunan yang terkecil dan cerun yang terlandai.

C *OQ* has a gradient of $\frac{8}{5}$ which is lower than *OP*.
OQ mempunyai kecerunan sebanyak $\frac{8}{5}$ *iaitu lebih rendah daripada OP.*

D *OR* has a value of gradient which is greater than *OQ*.
OR mempunyai nilai kecerunan yang lebih besar daripada OQ.

33 Diagram 17 shows a straight line PQ on a Cartesian plane.

Rajah 17 *menunjukkan garis lurus PQ pada suatu satah Cartes.*

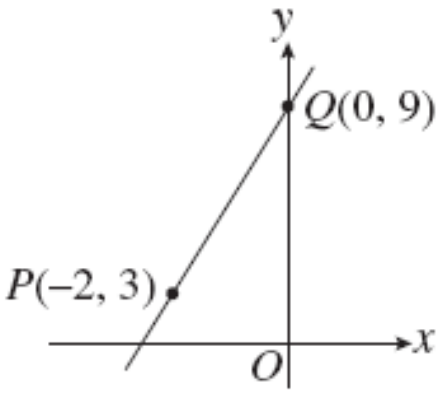


Diagram 17

Rajah 17

Find the *x*-intercept of the straight line *PQ*.

Cari pintasan-x bagi garis lurus PQ.

A -6

B -3

C -2

D -1

34 Diagram 18 shows the equation of the straight line *PQ* is $2y + x = 6$. The two straight lines, *PQ* and *RS* intersect at point *T* on the *y*-axis.

Rajah 18 *menunjukkan persamaan garis lurus PQ ialah* $2y + x = 6$. *Dua garis lurus, PQ dan RS bersilang pada titik T di atas paksi-y.*

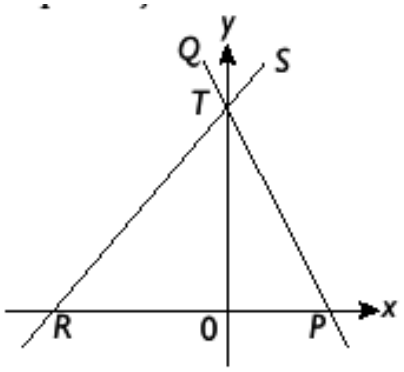


Diagram 18

Rajah 18

If the gradient of the straight line *RTS* is $\frac{1}{2}$, find the equation of *RTS*.

Jika kecerunan garis lurus RTS ialah $\frac{1}{2}$, *cari persamaan bagi RTS.*

A $y = x + 3$

B $y = x + 6$

C $y = \frac{1}{2}x + 3$

D $y = -\frac{1}{2}x + 5$

35 A box contains 8 black balls, 6 yellow balls and some blue balls. A ball is chosen at random from the box. The probability of choosing a yellow ball is $\frac{1}{3}$.

The probability of choosing a blue ball is

Sebuah kotak mengandungi 8 *biji bola hitam,* 6 *biji bola kuning dan sebilangan bola biru. Sebiji bola dipilih secara rawak daripada kotak itu. Kebarangkalian memilih sebiji bola kuning ialah* $\frac{1}{3}$.

Kebarangkalian memilih sebiji bola biru ialah

A $\frac{1}{9}$

B $\frac{2}{9}$

C $\frac{1}{2}$

D $\frac{2}{3}$

36 There are 45 packets of mango juice and orange juice in a refrigerator. A packet of drink is chosen at random from the refrigerator. The probability that a packet of orange juice is chosen is $\frac{2}{5}$. How many packets of orange juice need to be added to the refrigerator so that the probability of choosing a packet of orange juice is $\frac{1}{2}$?

Terdapat 45 *kotak jus mangga dan jus oren di dalam sebuah peti sejuk. Satu kotak minuman dipilih secara rawak daripada peti sejuk. Kebarangkalian sekotak jus oren dipilih ialah* $\frac{2}{5}$. *Berapakah bilangan jus oren yang perlu ditambahkan ke dalam peti sejuk supaya kebarangkalian sekotak jus oren dipilih ialah* $\frac{1}{2}$?

A 5

B 6

C 8

D 9

37 Given X varies directly as the square root of Y. State the relationship between X and Y.
Diberi X berubah secara langsung dengan punca kuasa dua Y. Nyatakan hubungan antara X dan Y.

A $X \propto \frac{1}{Y^2}$

B $X \propto Y^2$

C $X \propto Y^{\frac{1}{2}}$

D $X \propto \frac{1}{Y^{\frac{1}{2}}}$

38 The time taken to cut grass in a field varies directly as the area of the field and varies inversely as the number of the workers. Given 2 workers take 3 hours to cut grass in a field of an area of 1×10^4 m^2. Find the number of workers needed to cut grass in a field of an area of 4×10^4 m^2 in 8 hours.
Masa yang diambil untuk memotong rumput di sebuah padang berubah secara langsung dengan luas padang itu dan berubah secara songsang dengan bilangan pekerja. Diberi 2 orang pekerja mengambil masa 3 jam untuk memotong rumput di sebuah padang dengan luas 1×10^4 m^2. *Cari bilangan pekerja yang diperlukan untuk memotong rumput di sebuah padang dengan luas* 4×10^4 m^2 *dalam masa 8 jam.*

A 3

B 4

C 5

D 6

39 $\begin{pmatrix} 3 \\ 2 \\ -5 \end{pmatrix} - 4\begin{pmatrix} 1 \\ -3 \\ 7 \end{pmatrix} + \begin{pmatrix} 8 \\ -6 \\ 9 \end{pmatrix} =$

A $\begin{pmatrix} 9 \\ -16 \\ 32 \end{pmatrix}$

B $\begin{pmatrix} 7 \\ 8 \\ -24 \end{pmatrix}$

C $\begin{pmatrix} 10 \\ -16 \\ 32 \end{pmatrix}$

D $\begin{pmatrix} 10 \\ 8 \\ -24 \end{pmatrix}$

40 Given the matrix equation $(k \;\; 3)\begin{pmatrix} -5 & 0 \\ k & 4 \end{pmatrix} = (6 \;\; 12)$, find the value of k.

Diberi persamaan matriks $(k \;\; 3)\begin{pmatrix} -5 & 0 \\ k & 4 \end{pmatrix} = (6 \;\; 12)$, *cari nilai* k.

A -4

B -3

C 3

D 4

END OF QUESTION PAPER

KERTAS SOALAN TAMAT