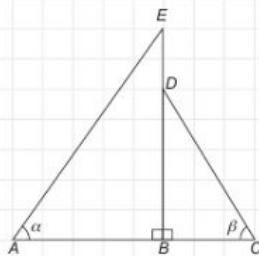


5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak

- S.P. 5.1.1** Mengenal pasti sisi bertentangan dan sisi bersebelahan berdasarkan suatu sudut tirus dalam segi tiga bersudut tegak.
S.P. 5.1.2 Membuat dan menentusahkan konjektur tentang hubungan antara sudut tirus dan nisbah sisi segi tiga bersudut tegak, dan seterusnya mentakrifkan sinus, kosinus dan tangen.
S.P. 5.1.3 Membuat dan menentusahkan konjektur tentang kesan perubahan saiz sudut terhadap nilai sinus, kosinus dan tangen.

Kenal pasti sisi bertentangan, sisi bersebelahan dan hipotenusa bagi sudut yang diberi. **TP 1**

Identify the opposite side, adjacent side and hypotenuse for the angles given.



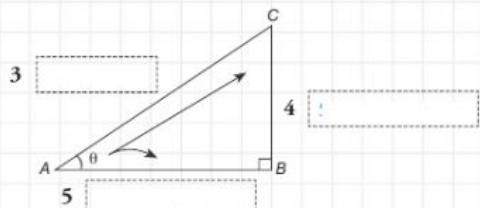
Sudut Angle	Sisi bertentangan Opposite side	Sisi bersebelahan Adjacent side	Hipotenusa Hypotenuse
1 α			
2 β			

Isi tempat kosong dengan jawapan yang betul. **TP 2**

Fill in the blanks with the correct answer.

Seterusnya, lengkapkan jadual berdasarkan maklumat dalam rajah. **TP 2** | **HEBAT MATEMATIK MODUL 30** Gangsa

Hence, complete the table based on the information in the diagram.

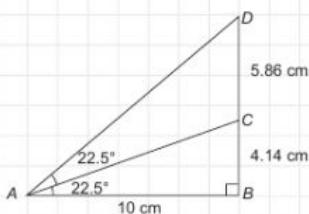


6	$\sin \theta$	Sisi bertentangan Hipotenusa	$\frac{BC}{AC}$
7	$\cos \theta$		-
8	$\tan \theta$	-	-

Rajah di bawah menunjukkan sebuah segi tiga bersudut tegak. Cari nisbah trigonometri berikut.

TP 2 | **HEBAT MATEMATIK MODUL 30** Gangsa

The diagram below shows a right-angled triangle. Find the following trigonometric ratios.



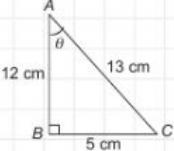
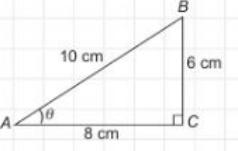
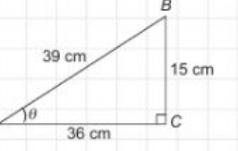
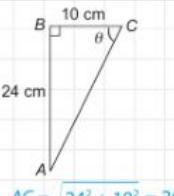
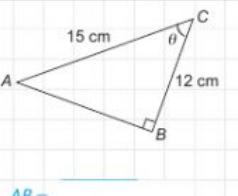
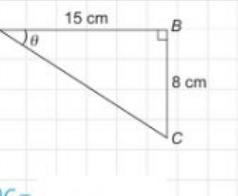
Nisbah trigonometri Trigonometric ratios	$\theta = 22.5^\circ$	$\theta = 45^\circ$
9 $\sin \theta$	$\frac{4.14}{10.82} = 0.383$	$\frac{10}{14.14} = 0.707$
10 $\cos \theta / \cos \theta$		
11 $\tan \theta$		



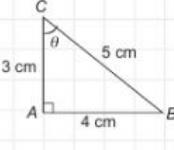
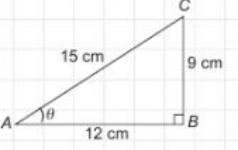
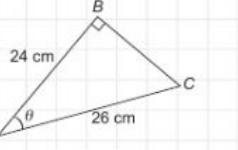
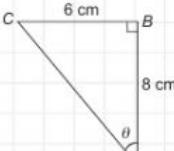
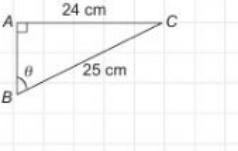
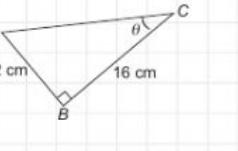
5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak

S.P: 5.1.4 Menentukan nilai sinus, kosinus dan tangen suatu sudut tirus.

Cari nilai $\sin \theta$ bagi setiap rajah yang berikut. **TP 3** | **HEBAT MATEMATIK MODUL 30** | GangsaFind the value of $\sin \theta$ in each of the following diagrams.

1  $\sin \theta = \frac{5}{13}$	2  $\sin \theta =$ $=$ $-$	3  $\sin \theta =$ $=$ $-$
4  $AC = \sqrt{24^2 + 10^2} = 26$ $\sin \theta = \frac{24}{26}$ $= \frac{12}{13}$	5  $AB =$ $\sin \theta =$ $=$ $-$	6  $AC =$ $\sin \theta =$ $=$ $-$

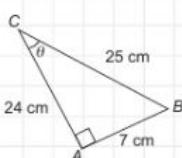
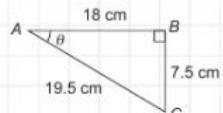
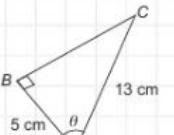
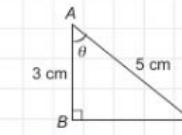
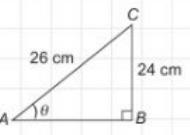
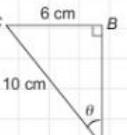
Cari nilai $\cos \theta$ bagi setiap rajah yang berikut. **TP 3** | **HEBAT MATEMATIK MODUL 30** | GangsaFind the value of $\cos \theta$ in each of the following diagrams.

7  $\cos \theta = \frac{3}{5}$	8  $\cos \theta =$ $=$ $-$	9  $\cos \theta =$ $=$ $-$
10  $AC = \sqrt{6^2 + 8^2} = 10$ $\cos \theta = \frac{8}{10}$ $= \frac{4}{5}$	11  $AB =$ $\cos \theta =$ $=$ $-$	12  $AC =$ $\cos \theta =$ $=$ $-$

5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak
S.P. 5.1.4 Menentukan nilai sinus, kosinus dan tangen suatu sudut tirus.

Cari nilai tan θ bagi setiap rajah yang berikut. **TP 3** **HEBAT MATEMATIK MODUL 30** Gangsa

Find the value of tan θ in each of the following diagrams.

1  $\tan \theta = \frac{7}{24}$	2  $\begin{aligned} \tan \theta &= \\ &= \end{aligned}$	3  $\begin{aligned} BC &= \\ &= \end{aligned}$ $\tan \theta = .$
4  $\begin{aligned} BC &= \sqrt{5^2 - 3^2} = 4 \\ \tan \theta &= \frac{4}{3} \end{aligned}$	5  $\begin{aligned} AB &= \\ \tan \theta &= \\ &= \end{aligned}$	6  $\begin{aligned} AB &= \\ \tan \theta &= \\ &= \end{aligned}$

Hitung nilai x tanpa melukis sebarang segi tiga bersudut tegak. **TP 3**
Find the value of x without drawing any right-angled triangle.

7 $\sin \theta = x$, $\cos/\cos \theta = \frac{2}{3}$,

$$\tan \theta = \frac{\sqrt{5}}{2}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\frac{\sqrt{5}}{2} = \frac{x}{\frac{2}{3}}$$

$$x = \frac{\sqrt{5}}{2} \times \frac{2}{3}$$

$$x = \frac{\sqrt{5}}{3}$$

CONTOH

8 $\sin \theta = \frac{3}{5}$, $\cos/\cos \theta = x$,

$$\tan \theta = \frac{3}{4}$$

9 $\sin \theta = \frac{5}{7}$, $\cos/\cos \theta = \frac{2\sqrt{6}}{7}$,

$$\tan \theta = x$$



5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak**S.P. 5.1.4** Menentukan nilai sinus, kosinus dan tangen suatu sudut tirus.**Cari nilai x bagi setiap yang berikut.** **TP 3** **HEBAT MATEMATIK MODUL 30** PerakFind the value of x in each of the following.

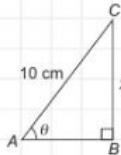
- 1** Diberi $\sin \theta = \frac{2}{2.5}$.

Given $\sin \theta = \frac{2}{2.5}$.

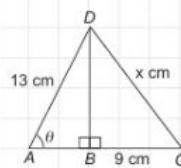
$$\sin \theta = \frac{2}{2.5}$$

$$\frac{x}{10} = \frac{2}{2.5}$$

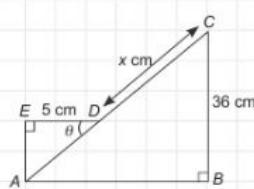
$$x = \frac{2}{2.5} \times 10 \\ = 8 \text{ cm}$$

**CONTOH PENGIRAAN**

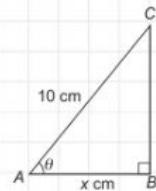
- 2** ABC ialah garis lurus dan diberi $\sin \theta = \frac{24}{26}$.

 ABC is a straight line and given $\sin \theta = \frac{24}{26}$.

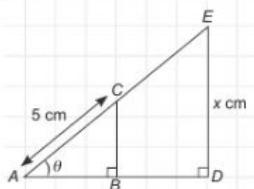
- 3** ADC ialah garis lurus dan diberi $\sin \theta = \frac{12}{13}$.

 ADC is a straight line and given $\sin \theta = \frac{12}{13}$.

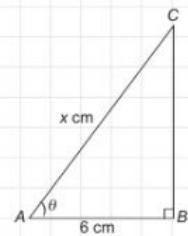
- 4** Diberi $\cos \theta = \frac{3}{5}$.

Given $\cos \theta = \frac{3}{5}$.

- 5** ABD ialah garis lurus. Diberi $AB = BD$

and $\cos \theta = \frac{3}{5}$. ABD is a straight line. Given $AB = BD$ and $\cos \theta = \frac{3}{5}$.

- 6** Diberi $\tan \theta = \frac{4}{3}$.

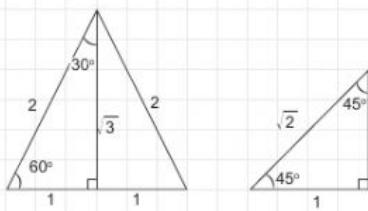
Given $\tan \theta = \frac{4}{3}$.

5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak

S.P. 5.1.5 Menentukan nilai sinus, kosinus dan tangen sudut 30° , 45° dan 60° tanpa menggunakan kalkulator.

Lengkapkan jadual berdasarkan segi tiga yang diberikan. **TP 3**

Complete the table based on the given triangles.



θ	Sudut istimewa/Special angles				
	0°	30°	45°	60°	90°
1 $\sin \theta$		$\frac{1}{2}$		$\frac{\sqrt{3}}{2}$	1
2 $\cos \theta$ $\cos \theta$	1		$\frac{1}{\sqrt{2}}$		0
3 $\tan \theta$		$\frac{1}{\sqrt{3}}$			$\sqrt{3}$

Tanpa menggunakan kalkulator saintifik, cari nilai bagi setiap yang berikut. **TP 3**

Without using a scientific calculator, find the value of each of the following.

4 $\sin 45^\circ + \cos 45^\circ$
 $\sin 45^\circ + \cos 45^\circ$
 $= \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}$
 $= \sqrt{2}$

5 $\tan 45^\circ - \cos 60^\circ$
 $\tan 45^\circ - \cos 60^\circ$
 $=$
 $=$

6 $3(\sin 60^\circ + \cos 30^\circ)$
 $3(\sin 60^\circ + \cos 30^\circ)$
 $=$
 $=$

Tukarkan sudut yang berikut kepada darjah dan minit. **TP 3**

Convert the following angles to degrees and minutes.

7 $15.6^\circ =$
 $= 15^\circ + (0.6 \times 60)'$
 $= 15^\circ + 36'$
 $= 15^\circ 36'$

8 $37.2^\circ =$
 $=$
 $=$
 $=$

9 $93.4^\circ =$
 $=$
 $=$
 $=$

Tukarkan sudut yang berikut kepada darjah. **TP 3**

Convert the following angles to degrees.

10 $5^\circ 12' =$
 $=$
 $=$
 $=$

11 $41^\circ 48' =$
 $=$
 $=$
 $=$

12 $76^\circ 18' =$
 $=$
 $=$
 $=$

5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak

- S.P. 5.1.6 Melakukan pengiraan yang melibatkan sinus, kosinus dan tangen.
 S.P. 5.1.7 Menyelesaikan masalah yang melibatkan sinus, kosinus dan tangen.

Cari nilai yang berikut menggunakan kalkulator saintifik. Berikan jawapan betul kepada empat tempat perpuluhan. **TP 4**

Find the value of the following using a scientific calculator. Give the answer correct to four decimal places.

1 $\sin 25^\circ$ =	2 $\cos/\cos 56.6^\circ$ =	3 $\tan 60^\circ 54'$ =
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Cari nilai θ menggunakan kalkulator saintifik. Berikan jawapan dalam darjah dan minit. **TP 3**

Find the value of θ using a scientific calculator. Give the answer in degrees and minutes.

4 $\sin \theta = 0.4564$ $\sin \theta = 0.4564$ $\theta = \sin^{-1} 0.4564$ $= 27.15^\circ$ $= 27^\circ 9'$ CONTOH	5 $\cos/\cos \theta = 0.7485$	6 $\tan \theta = 1.3472$
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Selesaikan. **TP 4** **HEBAT MATEMATIK MODUL 30** Perak

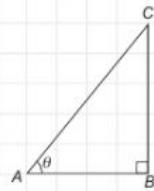
Solve.

- 7 Rajah menunjukkan segi tiga bersudut tegak ABC . Diberi $\sin \theta = \frac{24}{26}$ dan $\cos \theta = \frac{10}{26}$. Cari nilai $\tan \theta$.

Diagram shows a right-angled triangle ABC. Given $\sin \theta = \frac{24}{26}$ and $\cos \theta = \frac{10}{26}$. Find the value of $\tan \theta$.

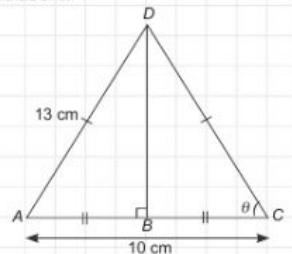
$$\begin{aligned}\tan \theta &= \frac{\sin \theta}{\cos \theta} = \frac{\frac{24}{26}}{\frac{10}{26}} \\ &= \frac{24}{10} \\ &= \frac{12}{5}\end{aligned}$$

CONTOH



- 8 Dalam rajah, ABC ialah garis lurus. Diberi $AD = DC$ dan B ialah titik tengah AC , cari nilai θ .

In the diagram, ABC is a straight line. Given $AD = DC$ and B is the midpoint of AC . Find the value of θ .



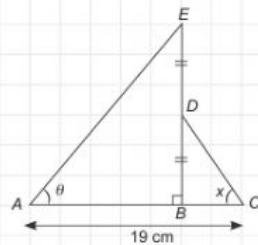
5.1 Sinus, Kosinus dan Tangen bagi Sudut Tirus dalam Segi Tiga Bersudut Tegak
S.P. 5.1.7 Menyelesaikan masalah yang melibatkan sinus, kosinus dan tangen.

Selesaikan masalah yang berikut. **TP 5** **HEBAT MATEMATIK MODUL 30** Perak

Solve the following problems.

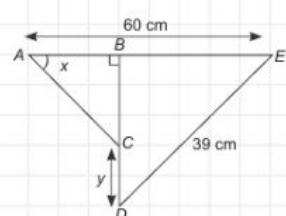
- 1** Dalam rajah, ABC ialah garis lurus. Diberi D ialah titik tengah BE dan $\cos x = \frac{9}{15}$, cari nilai θ .

In the diagram, ABC is a straight line. Given D is the midpoint of BE and $\cos x = \frac{9}{15}$, find the value of θ .



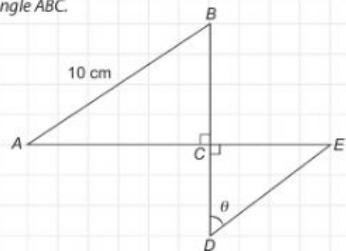
- 2** Dalam rajah, ABE ialah satu garis lurus. Diberi $\tan x = \frac{10}{24}$. Cari nilai y .

In the diagram, ABE is a straight line and $\tan x = \frac{10}{24}$. Find the value of y .



- 3** Dalam rajah, ACE ialah satu garis lurus. Diberi $\tan \theta = \frac{4}{3}$, cari luas, dalam cm^2 , segi tiga ABC . **KBAT** Menilai

In the diagram, ACE is a straight line. Given $\tan \theta = \frac{4}{3}$, find the area, in cm^2 , of triangle ABC .



- 4** Rajah menunjukkan gabungan sebuah segi tiga bersudut tegak dan sebuah segi empat tepat. Diberi panjang sisi segi empat itu ialah dua kali lebarnya dan $\sin \theta = 0.3846$. Cari lebar, dalam cm, segi empat tepat itu.

The diagram shows the combination of a right-angled triangle and a rectangle. Given the length of the rectangle is twice its width and $\sin \theta = 0.3846$. Find the width, in cm, of the rectangle.

