

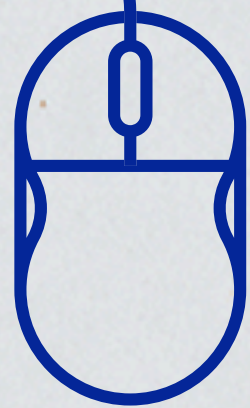
GETTING A IN SPM JUST WITH 1 CLICK

KSSM Semakan
SPM Form 5
Additional Math
Matematik
Tambahan
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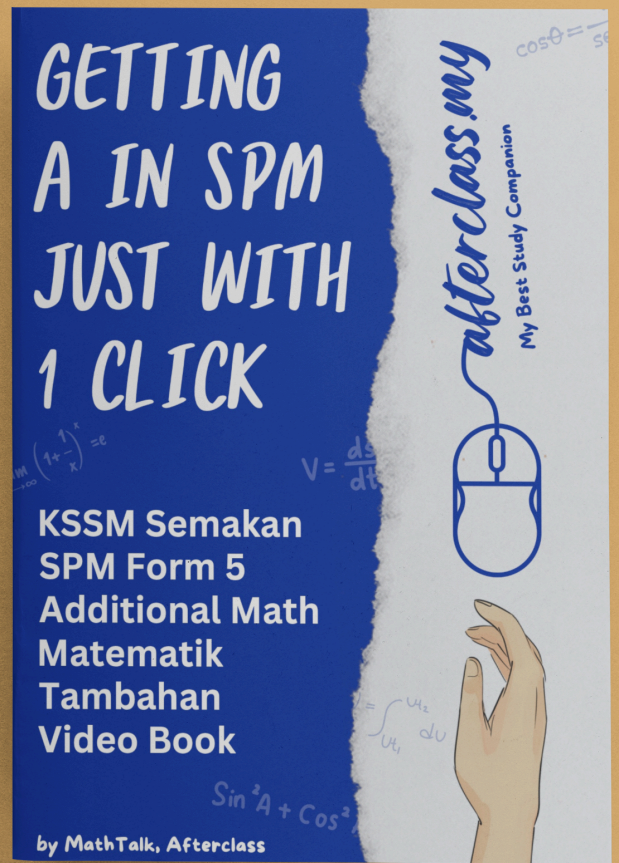
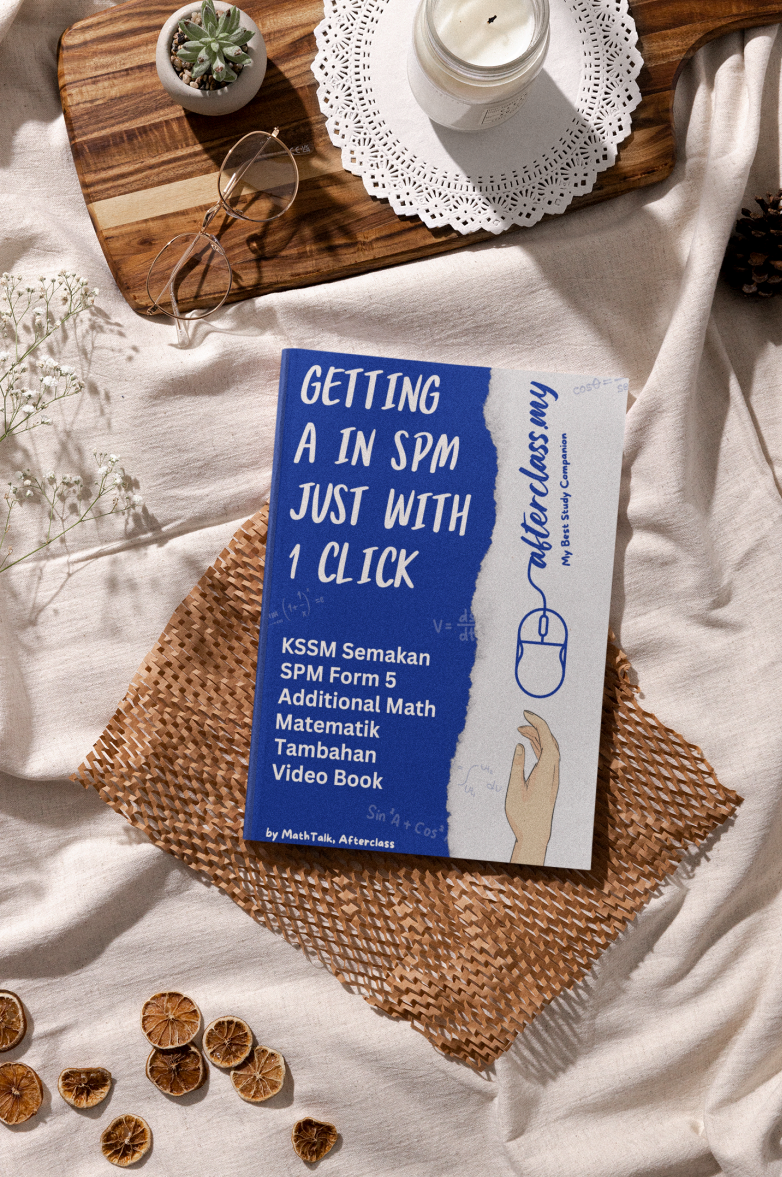
$$\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x = e$$

$$V = \frac{ds}{dt}$$

$$\int_{u_1}^{u_2} du$$

$$\sin^2 A + \cos^2 A$$

$$\cos \theta = \frac{1}{\sec \theta}$$



您接下来所看见的所有内容都附带讲解视频，学生完完全全可以依据自己的进度学习。这不是活动本也不是作业。是AddMath最完整课程，等于一本有电影的课本。每个单元概念的讲解，每题习题的讲解分析，及历届考题的分析。



MathTalk 课程特点

KSSM Semakan Additional Mathematics Form 5 Full Course

by 冰姐讲数 MathTalk


Website: afterclass.my
Tel: 016 - 538 4655

Content Kandungan 目录

! 课程内容依据KSSR

Semakan 最新课程编

写。

Chapter <i>Bab</i>	Title <i>Tajuk</i>	Pages <i>Muka Surat</i>
1	Circular Measures <i>Sukatan Membulat</i>	1 – 21
2	Differentiation <i>Pembezaan</i>	22 – 54
3	Integration <i>Pengambiran</i>	55 – 80
4	Permutation and Combination <i>Pilih atur dan Gabungan</i>	81 – 114
5	Probability Distribution <i>Taburan Kebarangkalian</i>	115 – 145
6	Trigonometry <i>Trigonometri</i>	146 – 188
7	Linear Programming <i>Pengaturcaraan Linear</i>	189 – 206
8	Kinematics of Linear Motion <i>Kinematik Gerakan Linear</i>	207 – 229
Answer	Please download the answer sheets (PDF file) from afterclass.my or mathtalk.my	

check out our website at
or mathtalk.my afterclass.my



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The three foundations of learning: seeing much, suffering much, and studying much.



Concept 1



！每进入一个新的单元，都会先让学生明白概念。而不是直接讲Formula那种。

Find the circumference using degree, x° <i>Cari lilitan menggunakan tanda darjah</i>		Find the circumference using radian, θ <i>Cari lilitan menggunakan radian</i>	
Arc Lengkok $= 2\pi r \times \frac{x^\circ}{360^\circ}$	Area Luas $= \pi r^2 \times \frac{x^\circ}{360^\circ}$	Arc Lengkok $= r\theta$	Area Luas $= \frac{1}{2} r^2 \theta$



Note 1



！分析整个单元即将学到的知识点。

Converting <i>Pertukaran</i>	Arc length <i>Panjang lengkok</i>	Area of the sector <i>Luas sektor</i>	Heron's formula <i>Formula Heron</i>
$180^\circ = \pi \text{ rad}$	$s = r\theta$ Where <i>dengan</i> $\theta = \text{rad}$	$A = \frac{1}{2} r^2 \theta$ Where <i>dengan</i> $\theta = \text{rad}$	$\sqrt{s(s-a)(s-b)(s-c)}$ Where <i>dengan</i> $s = \frac{a+b+c}{2}$



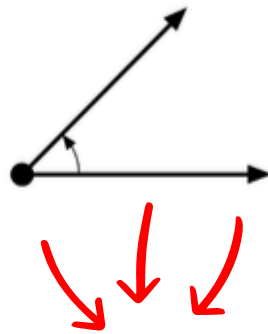
Did you know 1 [No explanation video provided in this part]

An air traffic controller uses his skills in reading and interpreting radar at the air traffic control centre to guide planes to fly safely without any collision in the air, which may result in injury and death. <i>Seorang pengawal lalu lintas udara menggunakan kemahirannya dalam membaca dan menafsirkan radar di pusat kawalan lalu lintas udara untuk mengarahkan pesawat terbang dengan selamat tanpa sebarang pelanggaran di udara, yang boleh menyebabkan kecederaan dan kematian.</i>	Odometer in a vehicle records the total mileage covered from the beginning to the end of the journey by using the circumference of the tyre and the number of rotations of the tyre. <i>Odometer dalam kenderaan mencatat jumlah jarak yang dilalui dari permulaan hingga akhir perjalanan dengan menggunakan lingkar tayar dan bilangan putaran tayar.</i>





Concept 2



! 我们将分析所有不同的情况，同学可以鸟瞰式了解完整概念。



Try Me 1

1 rad	2 rad	3 rad	4 rad	5 rad	6 rad



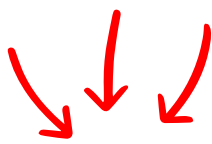
BingJie's message: The angle measure θ in radian in the entire circle below is at least 6 radians. *Ukuran sudut θ dalam radian dalam seluruh bulatan di bawah ini sekurang-kurangnya 6 radian.*



Try Me 2

Radians	π Radians





! 由浅到深一题一题讲解。

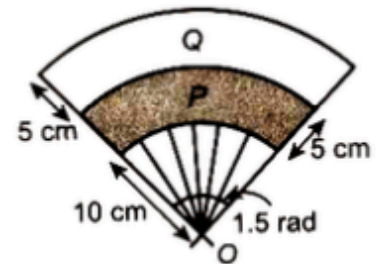
Tel: 016 - 538 4655



Exercise 10 Solve the following questions. *Selesaikan masalah berikut.*

1. Diagram shows a fan made up of two different pieces of clothes, P and Q. Find the difference of the area of the clothes P and Q.

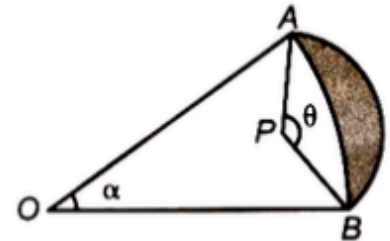
Rajah menunjukkan sebuah kipas yang dibina daripada dua keping kain, P dan Q yang berlainan. Cari beza luas kain P dan Q.



2. The diagram shows two sectors, AOB and APB. Given that the ratio of radius OA to PA is 3:1, $AP=2\text{cm}$ and the perimeter of the shaded region is 10cm.

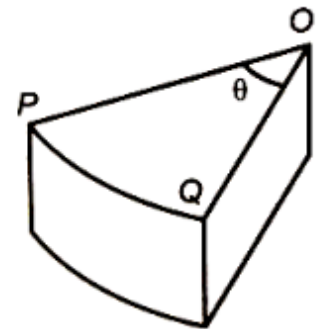
Rajah menunjukkan dua sektor, AOB dan APB. Diberi nisbah jejari OA kepada PA ialah 3:1, $AP=2\text{cm}$ dan perimeter rantau berlorek ialah 10cm.

- Show that $\theta = (5 - 3\alpha)\text{rad}$.
Tunjukkan bahawa $\theta = (5 - 3\alpha)\text{rad}$.
- If $\alpha = 30^\circ$, find the value of θ , in radian.
Jika $\alpha = 30^\circ$, cari nilai θ , dalam radian.



3. Diagram shows a piece of cake that is cut into 8 piece of the same size of a round cake at centre O and with a radius of 18cm. Find *Rajah menunjukkan sekeping kek yang telah dipotong kepada 8 keping yang bersaiz sama daripada satu kek yang bulat berpusat O dan berjajari 18cm, Cari* **Challenge**

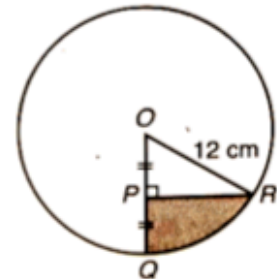
- The angle θ in radian. *Sudut θ dalam radian.*
- The arc length PQ. *Panjang lengkok PQ.*
- The total surface area of the cake if the thickness is 5cm. *jumlah luas permukaan kek itu jika tebal kek ialah 5cm.*





Tutorial 6

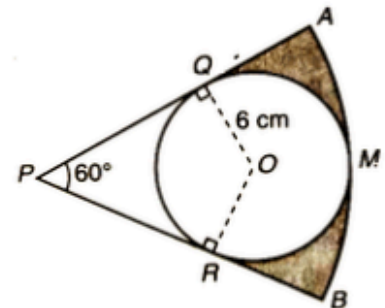
1. The given diagram shows a circle with centre O and a radius of 12cm . Given that $OP=PQ$, $\angle OPR=90^\circ$, find *Diberi bahawa rajah menunjukkan satu bulatan dengan pusat O dan berjajari 12cm . Diberi bahawa $OP=PQ$, $\angle OPR=90^\circ$, cari*



- $\angle POR$, in radians, *$\angle POR$ dalam radian.*
- the area, in cm^2 of the shaded region. *Luas kawasan rantau berlorek, dalam cm^2 .*

[Use *Guna* $\pi=3.142$]

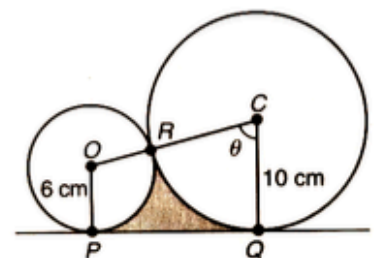
2. The following diagram shows a circle with centre O , of radius 6cm , inscribed in a sector $PAMB$ of a circle with centre P . The straight lines, AP and BP , are tangents to the circle at point P and point R respectively. Using $\pi = 3.142$, calculate *Rajah menunjukkan satu bulatan dengan pusat O , dan berjajari 6cm , dilukis dalam satu sektor $PAMB$ yang berpusat P . Garis lurus AP dan BP , ialah tangen kepada bulatan pada titik P dan R masing-masing. Gunakan $\pi = 3.142$, hitung*



- the length, in cm , of the arc AMB , *panjang lengkok ABM , dalam cm .*
- the area, in cm^2 , of the shaded region. *Luas kawasan rantau berlorek, dalam cm^2 .*

! 最难的KBAT 题目。

3. The given diagram shows two circles. The larger circle has centre C and a radius of 10cm . The smaller circle has centre O and a radius of 6cm . The circles touch at point R . The straight line PQ is a common tangent to the circles at point P and point Q . It is given that $\angle OCQ= \theta$ radians. Using $\pi = 3.142$, *Rajah menunjukkan dua bulatan. Bulatan yang lebih besar berpusat C dan berjajari 10cm . Bulatan yang lebih kecil berpusat O dan berjajari 6cm . Kedua-dua bulatan bersentuh pada titik R . Garis lurus PQ adalah tangen sepunya kepada bulatan pada titik P dan titik Q . Diberi bahawa $\angle OCQ= \theta$ radian. Gunakan $\pi = 3.142$,*



- show that $\theta=1.318$ (correct to four significant figures), *tunjukkan $\theta=1.318$ (betulkan jawapan kepada empat angka bererti)*
- find the length, in cm , of the minor arc PR , *panjang lengkok minor PR , dalam cm .*
- find the area, in cm^2 , of the shaded region. *Luas kawasan rantau berlorek, dalam cm^2 .*



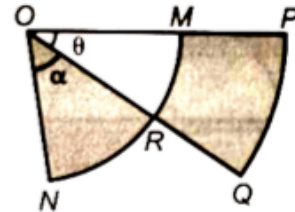
分析不同题型。



Exercise 11 Solve the following questions. *Selesaikan masalah berikut.*

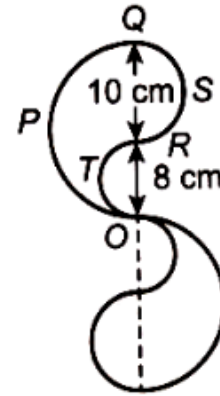
1. Diagram show two sectors, POQ and MON. M is the midpoint of OP. Express α in terms of θ if the perimeter of MPQR and ORN are the same.

Rajah menunjukkan dua sektor, POQ dan MON. M ialah titik tengah OP. Ungkapkan α dalam sebutan θ jika perimeter MPQR dan ORN adalah sama.



2. Diagram shows two similar wings of a fan. OPQ, OTR and QSR are three semicircles with the diameters as shown. Find

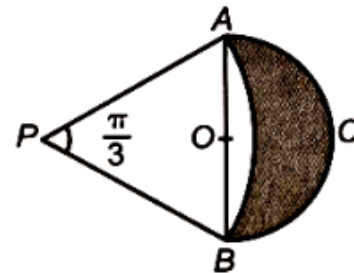
Rajah menunjukkan dua sayap yang serupa bagi sebuah kipas. OPQ, OTR dan QSR adalah tiga semibulatan dengan diameter yang ditunjukkan. Cari



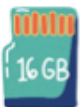
- a. The total perimeter of the wings in terms of π .
Perimeter keseluruhan dalam sebutan π . Challenge
- b. The total area in term of π .
Luas keseluruhan dalam sebutan π . Challenge

3. Diagram shows a semicircle with centre O and a sector with centre P and $\angle APB = \frac{\pi}{3}$. Find the radius PA if the perimeter of the shaded region is $\frac{35\pi}{6}$ cm.

Rajah menunjukkan satu semibulatan berpusat O dan satu sektor berpusat P dan $\angle APB = \frac{\pi}{3}$. Cari jejari PA jika perimeter rantau berlorek ialah $\frac{35\pi}{6}$ cm.



帮你Recall回重要的基础。



Recall 2 Sine rule **REMEMBER!**



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$



The three foundations of learning: seeing much, suffering much, and studying much.

为什么MathTalk课程更适合大家？



事半功倍

每个家长都知道，现在学生的活动特别多，回到家通常都十分疲倦，还需要上补习班的话，大家觉得孩子可以吸收多少呢？MathTalk 课程的优点在于孩子可以足够休息后，在精神最佳的状态依据自己的进度学习，效果肯定大大提升。

适合成绩不理想的同学

对于基础不好，还是学习能力比较慢，需要时间慢慢理解的同学，大家认为补习班的老师是否会为了一名学生而拖慢整个进度吗？前面单元没学到的课程又如何呢？MathTalk 的课程是一个题目一个视频，学生哪里不会，就学哪里，学到会为止。不用紧张，不用压力。



更适合成绩优越的同学

数学成绩比较优越的你，会比较希望在补习班中浪费时间听已经懂的题目，还是希望可以把握时间，尽量学习更多不同的题型，如果是后者，就只有MathTalk适合你。

10%的费用，10倍的效果

MathTalk 课程就等于和冰姐进行一对一的私人家教。课程不是平常上课补习班的录的视频，是冰姐特别一题一个讲解，完整却仔细的讲解每道题目和概念。但学费却只需不到补习费的十分之一。



每天进步1%

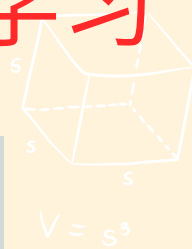
每天只需花几分钟的时间，学习数学课程。养成每天进步1%的好习惯，半年后你肯定被自己的改变吓一跳。

免费培训班

所有购买 MathTalk课程的同学都可免费获得全年不定期的现场直播培训班，或者以半价的优惠价出席特训班。同学可以和冰姐互动，同时冰姐也可以帮忙解决学生的问题。



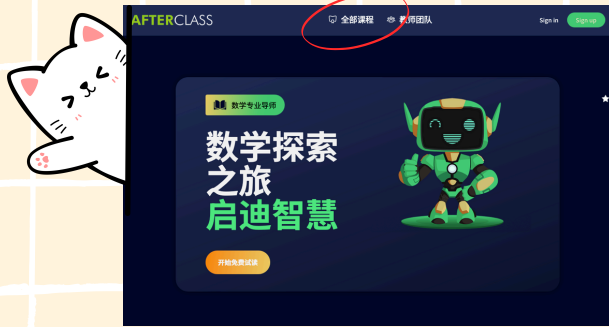
如何登入 Afterclass 网站开始学习



请登入到 MathTalk, Afterclass 网站

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$$ax + by = c$$

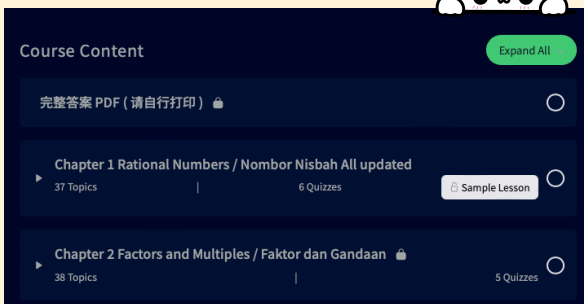


点击全部课程



选择您想学习的科目

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$V = \frac{4}{3}\pi r^3$$



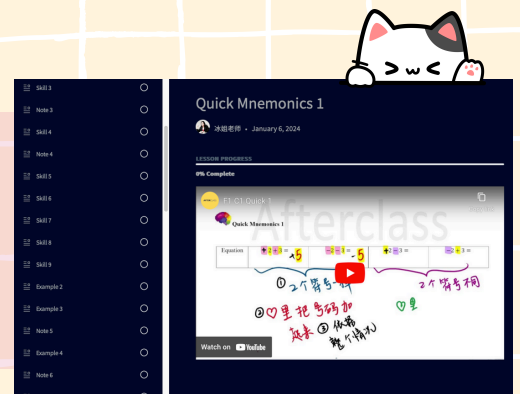
Scroll Down



至 Sample Lesson

选择您想观看的视频

$$V = \pi r^2 h$$



如何有效使用MathTalk 课程学习

步骤 1

每当开始学习新的单元，学生首选必须通过Concept和Note对即将学习的概念有初步的了解。

步骤 2

通过观看视频先从Example开始学习基本的题目和作答方法。

步骤 3

明白基本概念后，在先不看视频的情况下自己尝试Exercise题目，此类题目是针对Example所教的方法进行训练。完成后，并下载PDF检查答案，答案错的话再观察视频讲解。

步骤 4

重复步骤3并完成每个Exercise, Skill和Bonus的讲解绝对不可以错过，因为这些都是非常实用的技巧。

步骤 6

最后步骤，也是最重要的，就是Tutorial题目，Tutorial多数为历届考题，考试的题型。先自行尝试，如果答案再观看视频。所有Tutorial必须完成。

步骤 5

当你完成所有的Exercise，基本上就已经是把整个单元学完了。



Concept 1

Find the circumference using degree, x° <i>Cari lilitan mengguna tanda darjah, x°</i>		Find the circumference using radian, θ <i>Cari lilitan mengguna radian, θ</i>	
Arc <i>Lengkok</i> $= 2\pi r \times \frac{x^\circ}{360^\circ}$	Area <i>Luas</i> $= \pi r^2 \times \frac{x^\circ}{360^\circ}$	Arc <i>Lengkok</i> $= r\theta$	Area <i>Luas</i> $= \frac{1}{2} r^2 \theta$



Note 1

Converting <i>Pertukaran</i>	Arc length <i>Panjang lengkok</i>	Area of the sector <i>Luas sektor</i>	Heron's formula <i>Formula Heron</i>
$180^\circ = \pi \text{ rad}$	$s = r\theta$ Where <i>dengan</i> $\theta = \text{rad}$	$A = \frac{1}{2} r^2 \theta$ Where <i>dengan</i> $\theta = \text{rad}$	$\sqrt{s(s-a)(s-b)(s-c)}$ Where <i>dengan</i> $s = \frac{a+b+c}{2}$



Did you know 1 [No explanation video provided in this part]

An air traffic controller uses his skills in reading and interpreting radar at the air traffic control centre to guide planes to fly safely without any collision in the air, which may result in injury and death. <i>Seorang pengawal lalu lintas udara menggunakan kemahirannya dalam membaca dan menafsirkan radar di pusat kawalan lalu lintas udara untuk mengarahkan pesawat terbang dengan selamat tanpa sebarang pelanggaran di udara, yang boleh menyebabkan kecederaan dan kematian.</i>	Odometer in a vehicle records the total mileage covered from the beginning to the end of the mileage covered from the beginning to the end of the journey by using the circumference of the tyre and the number of rotations of the tyre. <i>Odometer dalam kenderaan mencatat jumlah jarak yang dilalui dari permulaan hingga akhir perjalanan dengan menggunakan lingkar tayar dan bilangan putaran tayar.</i>





Did You know 2 [No explanation video provided in this part]



Gottfried Wilhelm Leibniz was a brilliant German mathematician who introduced a method to calculate the value of $\pi = 3.142$ without using a circle. He also proved that $\frac{\pi}{4}$ can be obtained by using the following formula. *Gottfried Wilhelm Leibniz adalah seorang matematikawan cemerlang dari Jerman yang memperkenalkan sebuah kaedah untuk mengira nilai $\pi=3.142$ tanpa menggunakan bulatan. Beliau juga membuktikan bahawa $\pi/4$ boleh diperolehi dengan menggunakan formula berikut.*

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \dots$$


Note 2 **IMPORTANT**

MathTalk

$$\pi \text{ rad} = 180^\circ$$



Skill 1 **IMPORTANT**

MathTalk

$\pi \text{ rad} = \underline{\hspace{2cm}}^\circ$

$1 \text{ rad} = \underline{\hspace{2cm}}^\circ$

$180^\circ = \underline{\hspace{2cm}} \text{ rad}$

$1^\circ = \underline{\hspace{2cm}} \text{ rad}$

make me colourful, please!



Note 3

MEMO

One radian is the measure of an angle subtended at the centre of a circle by an arc whose length is the same as the radius of the circle.

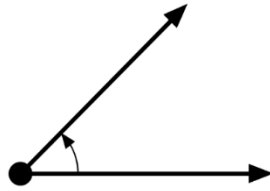
MEMO

Satu radian adalah ukuran sudut yang dibentuk pada pusat bulatan oleh lengkung yang panjangnya sama dengan jejari bulatan





Concept 2



Try Me 1

1 rad	2 rad	3 rad	4 rad	5 rad	6 rad



BingJie's message: The angle measure θ in radian in the entire circle below is at least 6 radians. *Ukuran sudut θ dalam radian dalam seluruh bulatan di bawah ini sekurang-kurangnya 6 radian.*

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Try Me 2

Radians	π Radians





Example 1



Convert each of the following angles into degrees.

Tukar setiap sudut berikut kepada darjah. [Use Guna $\pi = 3.142$]

a. $\frac{2}{5}\pi \text{ rad}$

[Ans: 72°]

b. 2.25 rad

[Ans: 128.89°]



Example 2



a. Convert 40° and 150° into radian, in terms of π . *Tukarkan 40° dan 150° kepada radian, dalam ungkapan π .* [Ans: $40^\circ = \frac{2}{9}\pi \text{ rad}$, $150^\circ = \frac{5}{6}\pi \text{ rad}$]

b. Convert $110^\circ 30'$ and 320° into radian.

Tukarkan $110^\circ 30'$ dan 320° kepada radian. [Use Guna $\pi = 3.142$]

[Ans: $110.5^\circ = 1.9288\text{rad}$, $320^\circ = 5.585\text{rad}$]



Exercise 1



Convert from radians to degrees <i>Tukarkan radian kepada darjah</i>			Convert from degrees to <i>Tukarkan darjah kepada</i>		
			radians		π
1			2		3
a	0.5 rad		a	20°	
b	2.46 rad		b	150°	
c	1.25 rad		c	18°	
d	4.37 rad		d	275°	
e	$\frac{\pi}{2} \text{ rad}$		e	$42\frac{1}{2}^\circ$	
f	$\frac{5}{3}\pi \text{ rad}$		f	156°	
g	$1.4\pi \text{ rad}$		g	300°	
h	$0.064\pi \text{ rad}$		h	315°	
i	0.38 rad		i	360°	
j	3.142 rad		j	90°	





Did you know 3



Why do we need to learn radian?



Note 4 Arc length and Area *Panjang lengkok and Luas kawasan*

Arc Length
Panjang Lengkok

$s = r\theta$

Area
Luas Kawasan

$A = \frac{1}{2}r^2\theta$



Skill 2 Relation between radius and radian *Hubungan antara jejari dan radian*

Radius <i>Jejari</i>		Radian (rad) or degree° <i>Radian (rad) atau darjah°</i>	





Try Me 3 Calculate arc length of the following with radius 7cm. *Hitung panjang lengkok yang berikut dengan jejari 7cm.*

	Sector <i>Sektor</i>	Degrees, x° <i>Darjah, x°</i>	Arc <i>Lengkok</i> $= 2\pi r \times \frac{x^\circ}{360^\circ}$	Radian, θ	Arc <i>Lengkok</i> = $r\theta$
1		360			
2		180			
3		90			



Skill 3 **IMPORTANT**

Arc length <i>Panjang lengkok</i>	Circumference <i>Lilitan</i>	Arc Length <i>Panjang Lengkok</i>	Perimeter <i>Perimeter</i>





Did you know 4

Could you tell the difference?



Circumference
Lilitan



Perimeter
Perimeter



Example 3

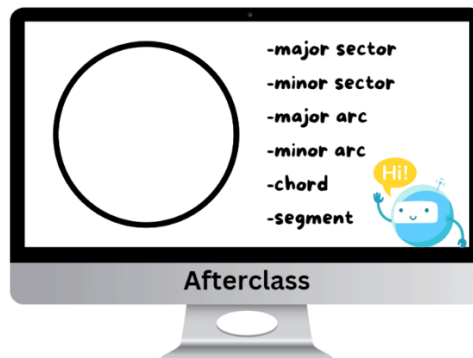
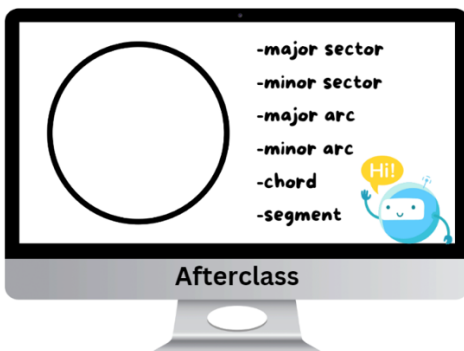


Find the arc length, s for each of the following sectors POQ with centre O . *Cari panjang lengkung, s untuk setiap sektor berikut POQ dengan pusat O . [Use $Guna \pi = 3.142$]*

1	2
Ans: 4.5cm	Ans: 12.568cm



Recall 1





Exercise 2

Determine the arc length, s for each of the following given circles. *Tentukan panjang lengkok, s bagi setiap bulatan yang diberi.*

1	2	3



Exercise 3

Determine the radius, j of the given the arc length, s and the angle of each of the following circles. *Tentukan jejari bulatan, j dengan diberikan panjang lengkok, s dan sudut bagi setiap bulatan yang berikut.*

1	2	3



Exercise 4 Determine the angle subtended, θ in radian, at the centre of the circle given the radius, j and the arc length, s for each of the following circles. *Tentukan sudut tercangkum, θ dalam radian, di pusat bulatan dengan diberikan jejari bulatan, j dan panjang lengkok, s bagi setiap bulatan yang berikut.*

1	2	3



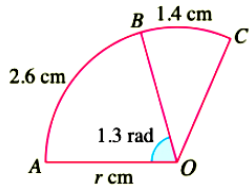


Example 4



The diagram shows a part of a circle with centre O and a radius of r cm. Given that $\angle AOB = 1.3$ rad and the arc lengths AB and BC are 2.6 cm and 1.4 cm respectively, calculate

Rajah menunjukkan sebahagian daripada bulatan dengan pusat O dan jejari r cm. Diberi bahawa $\angle AOB = 1.3$ rad dan panjang lengkok AB dan BC adalah masing-masing 2.6 cm dan 1.4 cm, kira



- a. The value of r , *nilai r* , [Ans: 2cm]
- b. $\angle BOC$, *in dalam radians*. [Ans: 0.7 rad]



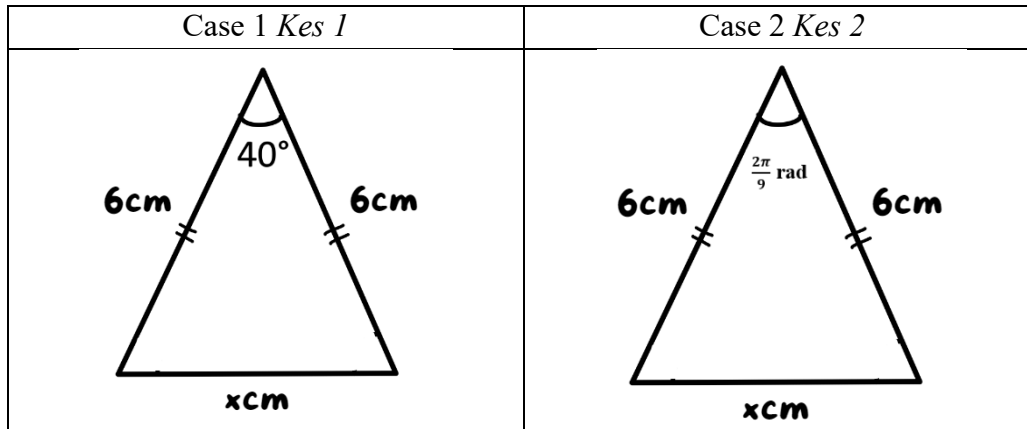
Skill 4 **IMPORTANT**

Length of arc <i>Panjang lengkok</i>	Perimeter of the segment <i>Perimeter tembereng</i>	Area of a sector <i>Luas sektor</i>	Area of the segment <i>Luas tembereng</i>
$S = r\theta$	$2r \sin \frac{\theta}{2} + r\theta$	$\frac{1}{2} r^2 \theta$	$\frac{1}{2} r^2 \theta - r^2 \sin \frac{\theta}{2} \cos \frac{\theta}{2}$



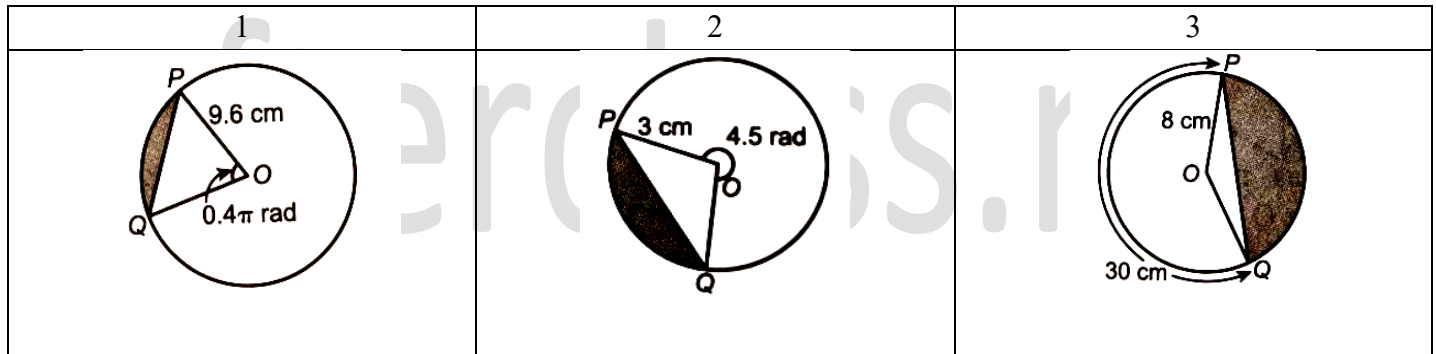


Calculator corner 1

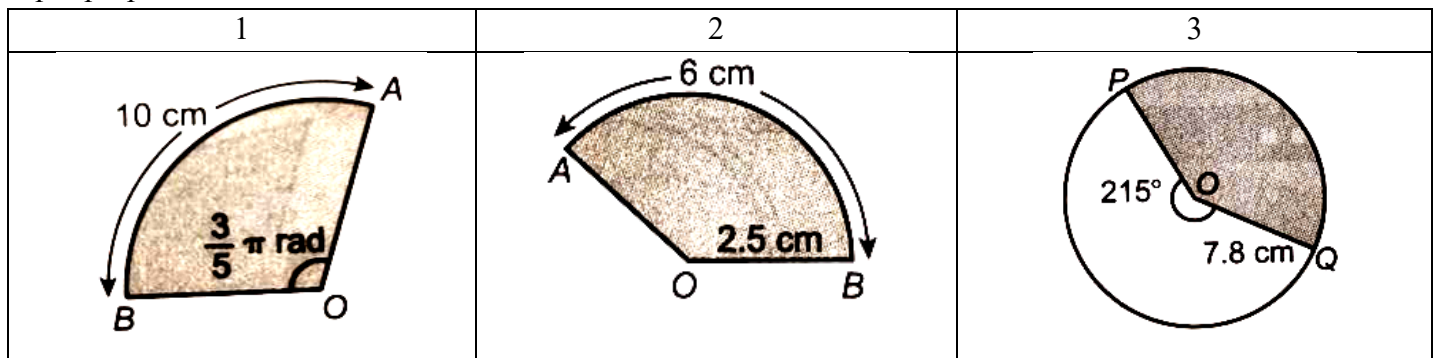


Exercise 5

Determine the perimeter of the segment of each of the following circles with centre O. *Tentukan perimeter tembereng bagi setiap bulatan berpusat O yang berikut.*



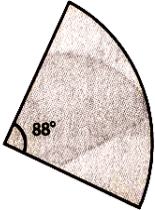
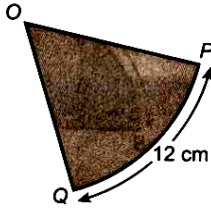
Exercise 6 Determine the area of the sector for each of the following circles. Give your answer to two decimal places. *Tentukan luas sektor bagi setiap bulatan yang berikut. Berikan jawapan anda kepada dua tempat perpuluhan.*





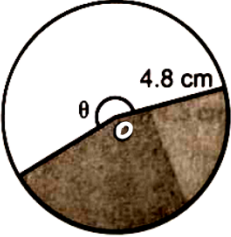
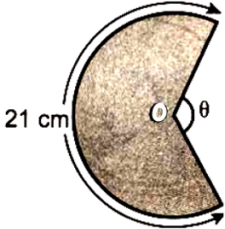
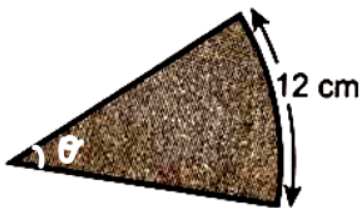
Exercise 7

Determine the radius of the following sector of circle. Give the answers to two decimal places. *Tentukan jejari bagi sektor bulatan yang berikut. Beri jawapan kepada dua tempat perpuluhan.*

1	2
	
<p>Given the area of the sector is 7.5cm^2. <i>Diberi luas sektor ialah 7.5cm^2.</i></p>	<p>Given that the area of the sector is 42cm^2 and the length of PQ is 12cm. <i>Diberi luas sektor ialah 42cm^2 dan panjang lengkok PQ ialah 12cm.</i></p>



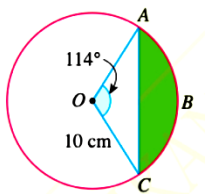
Exercise 8 Determine the angle subtended, θ , in radian at the centre of the circle for each of the following. Give your answer to two decimal places. *Tentukan sudut tercangkum, θ , dalam radian di pusat bulatan bagi yang berikut. Berikan jawapan anda kepada dua tempat perpuluhan.*

1	2	3
		
<p>Given the area of the sector is 33cm^2. <i>Diberi luas sektor ialah 33cm^2.</i></p>	<p>Given the area of the sector is 54cm^2. <i>Diberi luas sektor ialah 54cm^2.</i></p>	<p>Given the area of the sector is 46cm^2. <i>Diberi luas sektor ialah 46cm^2.</i></p>



Example 5  KSSM Semakan School Text Book

The diagram shows a circle with centre O and a radius of 10cm. The chord AC subtends an angle of 114° at the centre of the circle. Calculate the perimeter of the shaded segment ABC.
Rajah menunjukkan sebuah bulatan dengan pusat O dan jejari 10 cm. Perentas AC membentuk sudut 114° pada pusat bulatan. Kira perimeter tembereng berlerek ABC. [Use Guna $\pi = 3.142$] [Ans: 36.67cm]

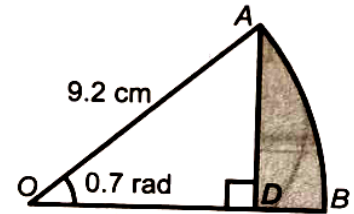




Exercise 9 Solve the following questions. *Selesaikan masalah berikut.*

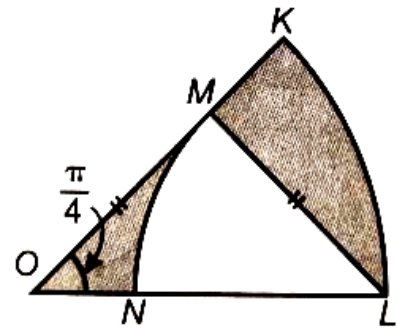
- The diagram shows a sector AOB with centre O and radius 9.2cm. Find the perimeter of the shaded region.

Rajah menunjukkan sebuah sektor AOB berpusat O and mempunyai jejari 9.2cm. Cari perimeter rantau berlorek itu.



- The diagram shows sector KOL with centre O and sector MLN with centre L. Given that $OM=ML=5\text{cm}$, and $\angle MOL = \frac{\pi}{4} \text{ rad}$, find the perimeter of the shaded region.

Rajah menunjukkan sektor KOL berpusat O dan MLN berpusat L. Diberi bahawa $OM=ML=5\text{cm}$, dan $\angle MOL = \frac{\pi}{4} \text{ rad}$, cari perimeter rantau berlorek itu.

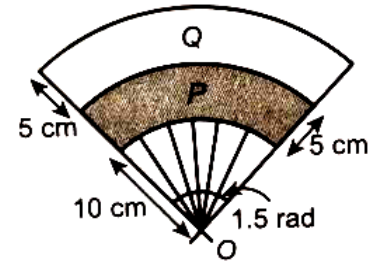




Exercise 10 Solve the following questions. *Selesaikan masalah berikut.*

1. Diagram shows a fan made up of two different pieces of clothes, P and Q. Find the difference of the area of the clothes P and Q.

Rajah menunjukkan sebuah kipas yang dibina daripada dua keping kain, P dan Q yang berlainan. Cari beza luas kain P dan Q.

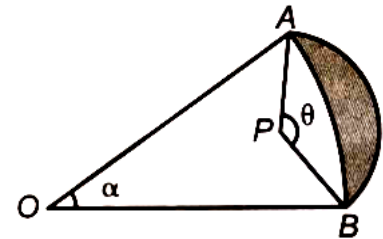


2. The diagram shows two sectors, AOB and APB. Given that the ratio of radius OA to PA is 3:1, $AP=2\text{cm}$ and the perimeter of the shaded region is 10cm.

Rajah menunjukkan dua sektor, AOB dan APB. Diberi nisbah jejari OA kepada PA ialah 3:1, $AP=2\text{cm}$ dan perimeter rantau berlorek ialah 10cm.

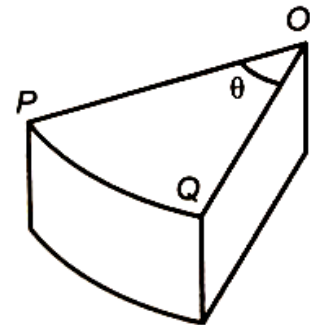
- a. Show that $\theta = (5 - 3\alpha)\text{rad}$.
Tunjukkan bahawa $\theta = (5 - 3\alpha)\text{rad}$.

- b. If $\alpha = 30^\circ$, find the value of θ , in radian.
Jika $\alpha = 30^\circ$, cari nilai θ , dalam radian.



3. Diagram shows a piece of cake that is cut into 8 piece of the same size of a round cake at centre O and with a radius of 18cm. Find *Rajah menunjukkan sekeping kek yang telah dipotong kepada 8 keping yang bersaiz sama daripada satu kek yang bulat berpusat O dan berjari 18cm, Cari Challenge*

- a. The angle θ in radian. *Sudut θ dalam radian.*
- b. The arc length PQ. *Panjang lengkok PQ.*
- c. The total surface area of the cake if the thickness is 5cm. *jumlah luas permukaan kek itu jika tebal kek ialah 5cm.*

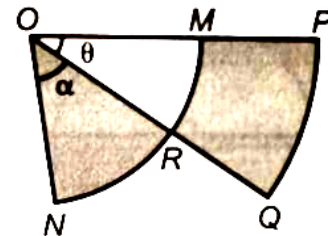




Exercise 11 Solve the following questions. *Selesaikan masalah berikut.*

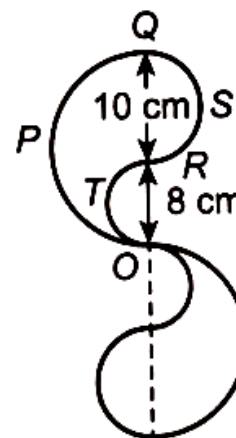
- Diagram show two sectors, POQ and MON. M is the midpoint of OP. Express α in terms of θ if the perimeter of MPQR and ORN are the same.

Rajah menunjukkan dua sektor, POQ dan MON. M ialah titik tengah OP. Ungkapkan α dalam sebutan θ jika perimeter MPQR dan ORN adalah sama.



- Diagram shows two similar wings of a fan. OPQ, OTR and QSR are three semicircles with the diameters as shown. Find

Rajah menunjukkan dua sayap yang serupa bagi sebuah kipas. OPQ, OTR dan QSR adalah tiga semibulatan dengan diameter yang ditunjukkan. Cari



- The total perimeter of the wings in terms of π .

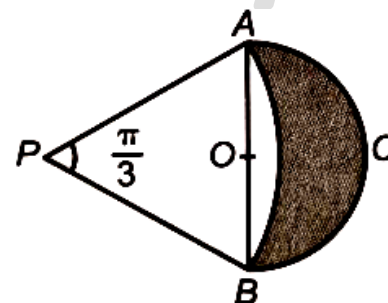
Perimeter keseluruhan dalam sebutan π . Challenge

- The total area in term of π .

Luas keseluruhan dalam sebutan π . Challenge

- Diagram shows a semicircle with centre O and a sector with centre P and $\angle APB = \frac{\pi}{3}$. Find the radius PA if the perimeter of the shaded region is $\frac{35\pi}{6}$ cm.

Rajah menunjukkan satu semibulatan berpusat O dan satu sektor berpusat P dan $\angle APB = \frac{\pi}{3}$. Cari jejari PA jika perimeter rantau berlorek ialah $\frac{35\pi}{6}$ cm.



Recall 2 Sine rule



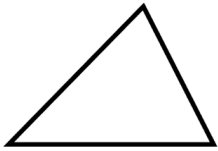
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$



The three foundations of learning: seeing much, suffering much, and studying much.



Recall 3 Cosine rule



Did you know 4 [No explanation video provided in this part]

Mathematicians in the olden days suggests that the constant π is the ratio of the circumference of a circle to its diameter. *Matematikawan zaman dahulu mengesyorkan bahawa π adalah nisbah lilitan bulatan kepada diameternya.*

The information below shows the estimated value of π based on the opinion of four well-known mathmaticians. *Maklumat di bawah ini menunjukkan nilai anggaran π berdasarkan pendapat empat ahli matematik yang terkenal.*

1	2	3	4
A Greek mathematician, Archimedes was able to prove that <i>Seorang matematikawan Greek, Archimedes, dapat membuktikan bahawa</i> $3\frac{10}{17} < \pi < 3\frac{1}{7}$.	Ptolemy, a Greco-Roman mathematician showed that the estimated value of $\pi = 3.142$. <i>Ptolemy, seorang matematikawan Greco-Roman, menunjukkan bahawa nilai anggaran π adalah 3.142.</i>	Euler, a Swiss mathematician wrote that Euler, <i>seorang matematikawan Swiss, menulis bahawa</i> $\frac{\pi^2}{6} = 1 + \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots$	Lambert, a German mathematician proved that π is an irrational number. <i>Lambert, seorang matematikawan German, membuktikan bahawa π adalah nombor tak rational.</i>
Other contribution	Other contribution	Other contribution	Other contribution
		$e^{(i\pi)} + 1 = 0$	Lambert's Law $\log_{10} \frac{I_b}{I_1} = \frac{k}{2.303} b = k' b$ b = Thickness k = constant of proportionality k' = $k (2.303)$ = another constant
	Ptolemy's Theorem $AC + BD = EF$	 Euler's Graph	 Johann Heinrich Lambert I am undecided whether or not the Milky Way is but one of countless others all of which form an entire system. Perhaps the light from these infinitely distant galaxies is so faint that we cannot see them. AL QUOTIS

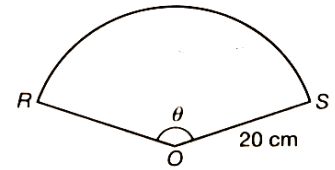




Tutorial 1

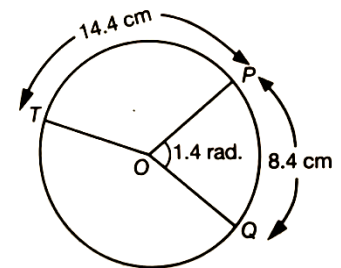
1. A 100cm long wire is bent to form a sector ORS, of radius 20cm, as shown in the diagram. Calculate the value of the angle θ , in degrees.

Seutas wayar yang berpanjang 100cm dibengkok untuk membentuk satu sektor ORS, dengan jejari 20cm seperti yang ditunjukkan dalam rajah. Kirakan nilai sudut θ , dalam darjah.



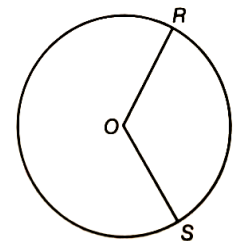
2. The diagram shows a circle with centre O. $\angle POQ = 1.4$ radians and the length of the arc PQ is 8.4cm. If the length of the arc TP is 14.4cm, find $\angle TOP$ in radians.

Rajah menunjukkan sebuah bulatan dengan pusat O. $\angle POQ = 1.4$ radian dan panjang lengkok PQ ialah 8.4cm. Jika panjang lengkok TP ialah 14.4cm, cari $\angle TOP$ dalam radian.



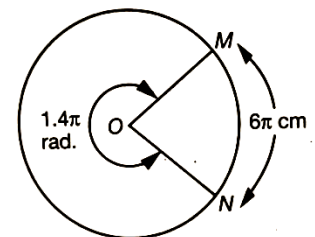
3. The diagram shows a circle with centre O. If the length of the minor arc RS is two times the radius of the circle, find the $\angle ROS$ in degrees.

Rajah menunjukkan sebuah bulatan dengan pusat O. Jika panjang lengkok minor RS ialah dua kali ganda jejari bulatan, cari $\angle ROS$ dalam darjah.



4. The diagram shows a circle with centre O. The reflex angle MON is 1.4π radians and the length of the arc MN is 6π cm. Find the radius of the circle.

Rajah menunjukkan sebuah bulatan dengan pusat O. Sudut refleks MON ialah 1.4π radian dan panjang lengkok MN ialah 6π cm. Cari jejari bulatan itu.

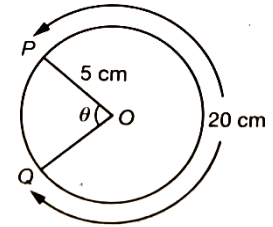




Tutorial 2

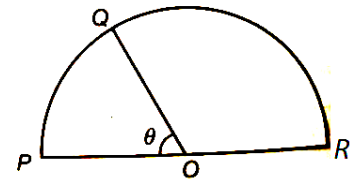
1. The diagram shows a circle with centre O and a radius of 5cm . Find the angle θ , in radians.

Rajah menunjukkan sebuah bulatan dengan pusat O dan berjajari 5cm . Cari sudut θ , dalam radian.



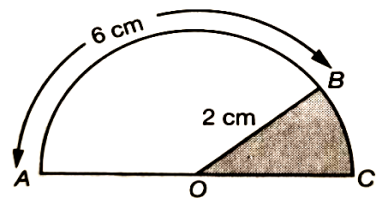
2. The diagram below shows a semicircle PQR with centre O . If the sum of the radius of the semicircle and the length of the arc PQ is equal to the length of the arc QR , find the value of θ , in radians.

Rajah menunjukkan sebuah semibulatan PQR dengan pusat O . Jika hasil tambah jejari semibulatan dan panjang lengkok PQ adalah sama dengan panjang lengkok QR , cari nilai θ , dalam radian.



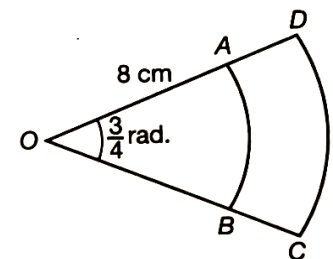
3. The diagram shows a semicircle $OABC$ with centre O and a radius of 2cm . If the length of the arc AB is 6cm , find the perimeter of the shaded region in terms of π .

Rajah menunjukkan sebuah semibulatan $OABC$ dengan pusat O dan berjajari 2cm . Jika panjang lengkok AB ialah 6cm , cari perimeter bagi luas kawasan berlengk dalam sebutan π .



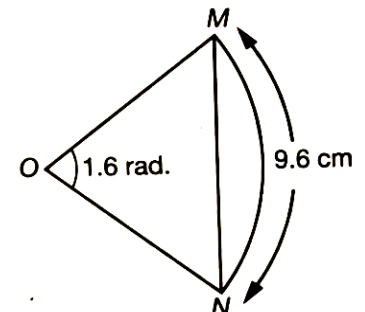
4. The diagram shows two sectors of two concentric circles with centre O . It is given that $OA=8\text{cm}$ and $\angle AOB = \frac{3}{4}$ radians. If the perimeter of $ABCD$ is 17.5cm , find the length of AD .

Rajah menunjukkan dua sektor bagi dua bulatan yang sepusat dengan pusat O . Diberi bahawa $OA=8\text{cm}$ dan $\angle AOB = \frac{3}{4}$ radian. Jika perimeter $ABCD$ ialah 17.5cm , cari panjang AD .



5. The diagram shows the sector of a circle with centre O . Given that $\angle MON=1.6$ radians and the length of the arc MN is 9.6cm , find the length of the chord MN .

Rajah menunjukkan sektor bagi sebuah bulatan yang berpusat O . Diberi bahawa $\angle MON=1.6$ radian dan panjang lengkok MN ialah 9.6cm , cari panjang kord MN .

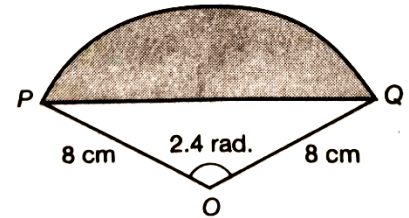




Tutorial 3

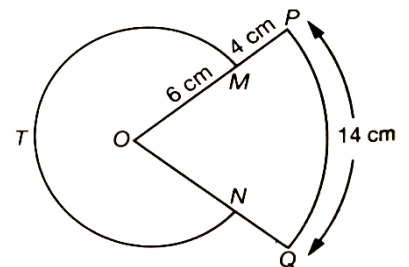
- The diagram shows the sector of a circle with centre O and a radius of 8cm . If $\angle POQ = 2.4\text{radians}$, calculate the perimeter of the shade segment.

Rajah menunjukkan sektor bulatan dengan pusat O dan berjajari 8cm . Jika $\angle POQ = 2.4\text{radian}$, kirakan perimeter bagi segmen yang berlorek.



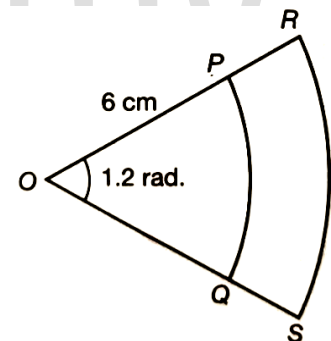
- The diagram shows two arcs of two concentric circles with centre O . Given that $OM = 6\text{cm}$, $MP = 4\text{cm}$ and the length of the arc PQ is 14cm , find the length of the arc MTN .

Rajah menunjukkan dua lengkok bagi dua bulatan sepusat dengan pusat O . Diberi bahawa $OM = 6\text{cm}$, $MP = 4\text{cm}$ dan panjang lengkok PQ ialah 14cm , cari panjang lengkok MTN .



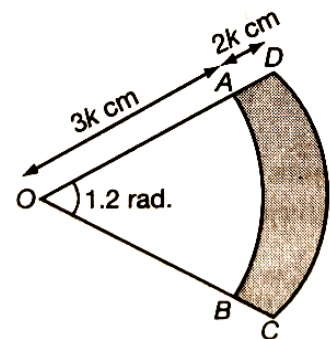
- The diagram shows two sectors of two concentric circles with centre O . It is given that $OP = 6\text{cm}$ and $\angle POQ = 1.2\text{ radians}$. If the ratio of the length of the arc PQ to the length of the arc RS is $2:3$, find the perimeter of the sector ORS .

Rajah menunjukkan dua sektor bagi dua bulatan sepusat dengan pusat O . Diberi bahawa $OP = 6\text{cm}$ dan $\angle POQ = 1.2\text{ radian}$. Jika nisbah panjang lengkok PQ kepada panjang lengkok RS ialah $2:3$, cari perimeter bagi sektor ORS .



- The diagram shows two sectors of two concentric circles with centre O . If is given that $OA = 3\text{kcm}$, $AD = 2\text{kcm}$ and $\angle AOB = 1.2\text{radians}$. If the area of the shaded region is 38.4cm^2 , find the value of k .

Rajah menunjukkan dua sektor dengan bagi dua bulatan sepusat O . Jika diberi bahawa $OA = 3\text{kcm}$, $AD = 2\text{kcm}$ dan $\angle AOB = 1.2\text{radian}$. Jika luas kawasan berlorek ialah 38.4cm^2 , cari nilai k .

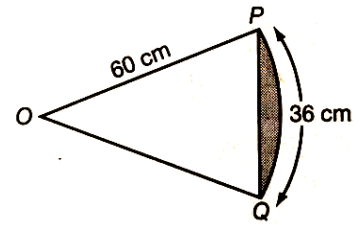




Tutorial 4

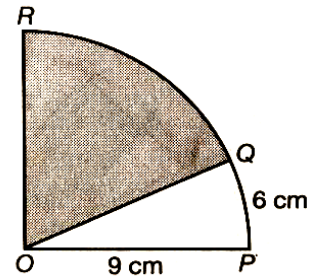
1. The diagram shows a sector OPQ, of radius 60cm. If the length of the arc PQ is 36cm, find the area of the shaded segment.

Rajah menunjukkan satu sektor OPQ yang berjajari 60cm. Jika panjang lengkok PQ ialah 36cm, cari luas kawasan segmen yang berlorek.



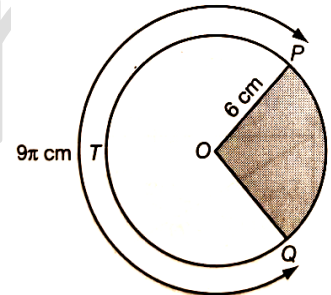
2. The diagram shows a quadrant ORP with centre O and a radius of 9cm. If the length of the arc PQ is 6cm, find the area of the shaded region.

Rajah menunjukkan satu kuadran ORP dengan pusat O dan jejarynya 9cm. Jika panjang lengkok PQ ialah 6cm, cari luas kawasan berlorek.



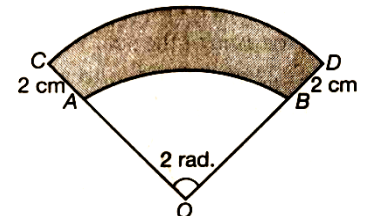
3. The diagram shows a circle with centre O and a radius of 6cm. If the length of the major arc PTQ is 9π cm, find the area of the shaded region in the terms of π .

Rajah menunjukkan satu bulatan dengan pusat O yang berjajari 6cm. Jika panjang lengkok major PTQ ialah 9π cm, cari luas kawasan berlorek dalam ungkapan π .



4. The diagram shows two sectors of two concentric circles with centre O. It is given that $\angle AOB=2$ radians and $AC=BD=2$ cm. If the area of the shaded region is 20cm^2 , find the length of OA.

Rajah menunjukkan dua sektors dengan dua bulatan sepusat O. Diberi bahawa $\angle AOB=2$ radian dan $AC=BD=2$ cm. Jika luas kawasan berlorek ialah 20cm^2 , cari panjang OA.

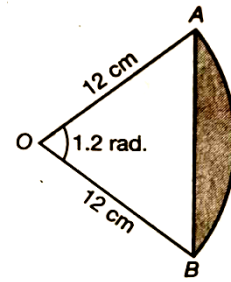




Tutorial 5

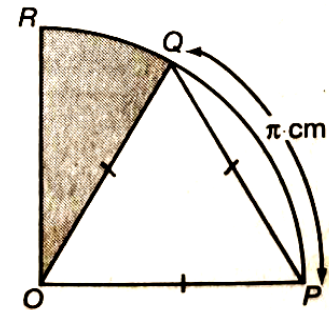
- The diagram shows a sector OAB, of radius 12cm. If $\angle AOB = 1.2$ radians, calculate the area of the shaded segment.

Rajah menunjukkan satu sektor OAB, dengan jejari 12cm. Jika $\angle AOB = 1.2$ radian, hitung luas segmen yang berlorek.



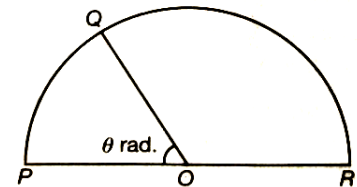
- The diagram shows a quadrant ORQP. $\triangle OQP$ is an equilateral triangle. Given that the length of the arc PQ is π cm, find the area of the shaded region in terms of π .

Diagram menunjukkan kuadran ORQP. $\triangle OQP$ ialah segitiga sama sisi. Diberi panjang lengkok PQ ialah π cm, cari luas kawasan yang berlorek dalam sebutan π .



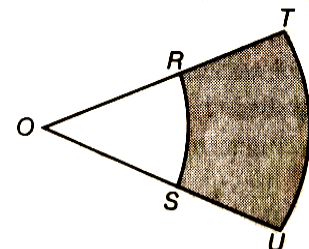
- The diagram shows a semicircle with centre O. Given that $\angle POQ = \theta$ radians and the ratio of the area of the sector OPQ to the area of the sector OQR is 3:5, find θ in terms of π .

Rajah menunjukkan satu semi bulatan dengan pusat O. Diberi $\angle POQ = \theta$ radian dan nisbah luas sektor OPQ kepada luas nisbah OQR ialah 3:5, cari θ dalam sebutan π .



- The diagram shows two sectors of two concentric circles with centre O. R and S are the midpoints of OT and OU respectively. Find the ratio of the area of the sector ORS to the area of the shaded region RSUT.

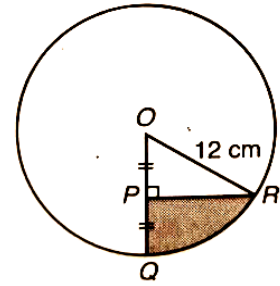
Rajah menunjukkan dua sektor bagi dua bulatan sepusat O. R and S ialah titik tengah bagi OT dan OU masing-masing. Cari nisbah bagi luas kawasan sektor ORS kepada luas kawasan berlorek RSUT.



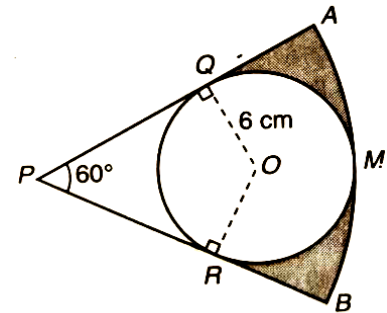


Tutorial 6

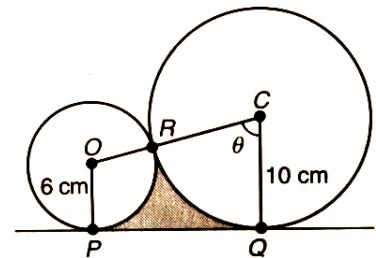
1. The given diagram shows a circle with centre O and a radius of 12cm . Given that $OP=PQ$, $\angle OPR=90^\circ$, find *Diberi bahawa rajah menunjukkan satu bulatan dengan pusat O dan berjajari 12cm . Diberi bahawa $OP=PQ$, $\angle OPR=90^\circ$, cari*
- $\angle POR$, in radians, *$\angle POR$ dalam radian.*
 - the area, in cm^2 of the shaded region. *Luas kawasan rantau berlorek, dalam cm^2 .*
- [Use *Guna* $\pi=3.142$]



2. The following diagram shows a circle with centre O , of radius 6cm , inscribed in a sector $PAMB$ of a circle with centre P . The straight lines, AP and BP , are tangents to the circle at point P and point R respectively. Using $\pi = 3.142$, calculate *Rajah menunjukkan satu bulatan dengan pusat O , dan berjajari 6cm , dilukis dalam satu sektor $PAMB$ yang berpusat P . Garis lurus AP dan BP , ialah tangen kepada bulatan pada titik P dan R masing-masing. Gunakan $\pi = 3.142$, hitung*
- the length, in cm , of the arc AMB , *panjang lengkok AMB , dalam cm .*
 - the area, in cm^2 , of the shaded region. *Luas kawasan rantau berlorek, dalam cm^2 .*



3. The given diagram shows two circles. The larger circle has centre C and a radius of 10cm . The smaller circle has centre O and a radius of 6cm . The circles touch at point R . The straight line PQ is a common tangent to the circles at point P and point Q . It is given that $\angle OCQ = \theta$ radians. Using $\pi = 3.142$, *Rajah menunjukkan dua bulatan. Bulatan yang lebih besar berpusat C dan berjajari 10cm . Bulatan yang lebih kecil berpusat O dan berjajari 6cm . Kedua-dua bulatan bersentuh pada titik R . Garis lurus PQ adalah tangen sepunya kepada bulatan pada titik P dan titik Q . Diberi bahawa $\angle OCQ = \theta$ radian. Gunakan $\pi = 3.142$,*
- show that $\theta=1.318$ (correct to four significant figures), *tunjukkan $\theta=1.318$ (betulkan jawapan kepada empat angka bererti)*
 - find the length, in cm , of the minor arc PR , *panjang lengkok minor PR , dalam cm .*
 - find the area, in cm^2 , of the shaded region. *Luas kawasan rantau berlorek, dalam cm^2 .*



Answer Jawapan

Exercise 1

Convert from radians to degrees <i>Tukarkan radian kepada darjah</i>			Convert from degrees to <i>Tukarkan darjah kepada</i>			
		1			radians	π
					2	3
a	0.5 rad	28.65°	a	20°	0.3491	$\frac{\pi}{9}$
b	2.46 rad	140.95°	b	150°	2.618	$\frac{5\pi}{6}$
c	1.25 rad	71.62°	c	18°	0.3142	0.1 π
d	4.37 rad	250.38°	d	275°	4.8	$\frac{55\pi}{36}$
e	$\frac{\pi}{2}$ rad	90°	e	$42\frac{1}{2}^\circ$	0.7419	$\frac{17\pi}{72}$
f	$\frac{5}{3}\pi$ rad	300°	f	156°	2.723	$\frac{12\pi}{15}$
g	1.4 π rad	252°	g	300°	5.2367	$\frac{5\pi}{3}$
h	0.064 π rad	11.52°	h	315°	5.4985	$\frac{7\pi}{4}$
i	0.38 rad	21.77°	i	360°	6.2842	2 π
j	3.142 rad	180°	j	90°	1.571	$\frac{\pi}{2}$

Exercise 2

- 7.0695cm
- 102.172cm
- 41.84cm

Exercise 3

- 3.1cm
- 5.7cm
- 3.05cm

Exercise 4

- 2.362 rad
- 2.44 rad
- 4.784 rad



Exercise 5

1. 23.35cm
2. 10.02cm
3. 35.53cm

Exercise 6

1. 94.25cm
2. 273.16cm
3. 76.97cm

Exercise 7

1. 3.125cm
2. 7cm

Exercise 8

1. 3.419rad
2. 2.1999rad
3. 1.5652rad

Exercise 9

1. 14.53cm
2. 23.62cm

Exercise 10

1. 37.5cm^2
2. a. Pls refer to video b. 3.43rad
3. a. $\theta = \frac{\pi}{4}$ b. 14.14cm c. 505.17cm^2

Exercise 11

1. $\alpha = 3\theta$
2. a. 36π b. $90\pi\text{cm}^2$
3. 7cm



Tutorial 1

1. 171.87°
2. 2.4rad
3. 114.58°
4. 10cm

Tutorial 2

1. 2.284rad
2. 1.071 radians
3. $(2\pi - 2)\text{cm}$
4. 2cm
5. 8.61cm

Tutorial 3

1. 34.11cm
2. 29.30cm
3. 28.8cm
4. $k=2$

Tutorial 4

1. 63.64cm^2
2. 36.62cm
3. $9\pi\text{cm}^2$
4. 4cm

Tutorial 5

1. 19.30cm^2
2. $\frac{3\pi}{4}\text{cm}^2$
3. $\theta = \frac{3\pi}{8}$
4. $1:3$

Tutorial 6

1. a. 1.0473 rad b. 44.23cm^2
2. a. 18.85cm b. 31.86cm^2
3. a. Pls refer to video b. 10.94cm c. 25.21cm^2



热卖中

by 冰姐讲数 MathTalk, Afterclass



一年级数学



二年级数学



三年级数学



四年级数学



五年级数学



六年级数学



独中初一数学



独中初二数学



独中初三数学



国中F1 Math



国中F2 Math



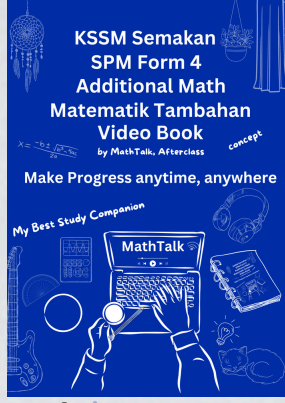
国中F3 Math



国中F4 Math



国中F5 Math



国中F4 AddMath



独中初一地理

整理中

独中高一数学 (文商)

独中高二数学 (文商)

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