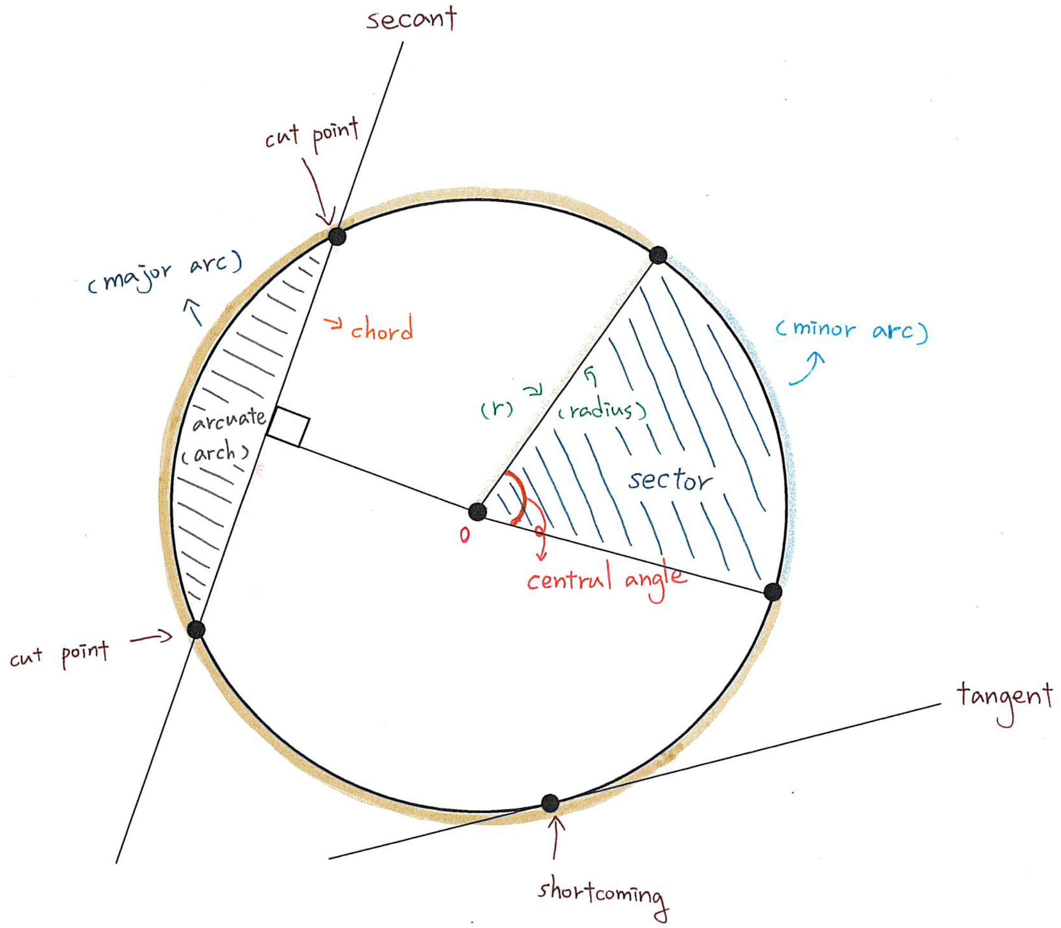
葉翊暄

單元名稱	Basic concept of circle 圓形基本概念

- Definition the circle 圓的定義

1. The circle is a shape.
Consisting of all points in a plane that are at a given distance (↓ radius (r)) from a given point. (↓ center of the circle (O))

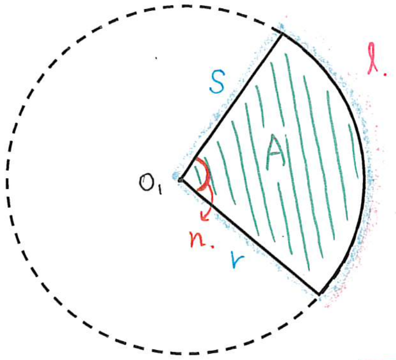
- The names of various parts of the circle 圓各部位的名稱



葉翊暄

單元名稱	The area and perimeter of sectors and arcuates 扇形、弓形的面積與周長

● The area and perimeter of sectors



面積

The area of a sector

= The area of a circle x radio (比例)

radio = center angle (圓心角) / inseribed angle (周角 = 360°)

or radio = arc length (被加數) / circumference (圓周長)

A = 面積
S = 周長
r = 半徑
ℓ = 弧

$$A = r^2\pi \times \frac{n.}{360}$$
$$= r^2\pi \times \frac{\ell}{2r\pi} = \frac{r \times \ell}{2}$$

周長

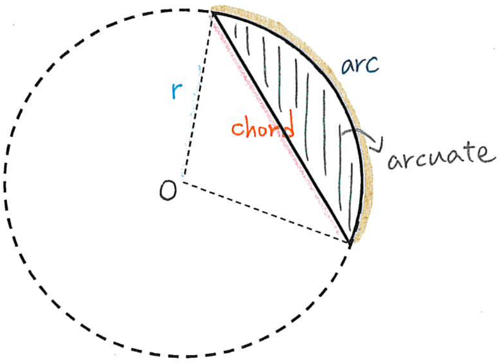
The perimeter (周長) of a sector

= the arc length + diameter (直徑)

the arc length = the circumference x radio

$$S = 2r\pi \times \frac{n}{360} + 2r$$

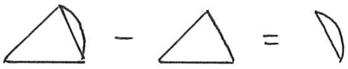
● The area and perimeter of arcuates



The area of arcuate

= The area of a sector

= The area of a triangle



The perimeter of a arcuate

= the arc length + the chord length

葉翊暄

<table>
<tr><td>單元名稱</td><td colspan="2">The relative position of a cricle and a point 點與圓的相對位置關係
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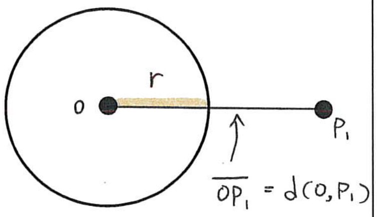
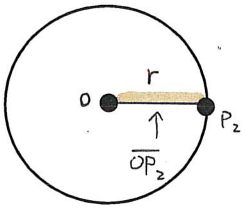
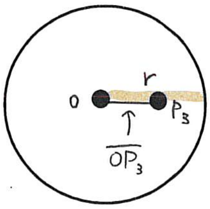
<tr>
<td>
(If) $\overline{OP_1} > r$
→ $P_1 \in$ outer</td>
<td>
(If) $\overline{OP_2} = r$
→ $P_2 \in$ on</td>
<td>
(If) $\overline{OP_3} < r$
→ $P_3 \in$ inner</td>
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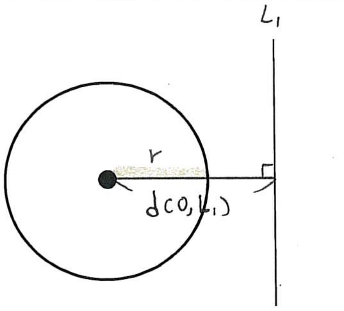
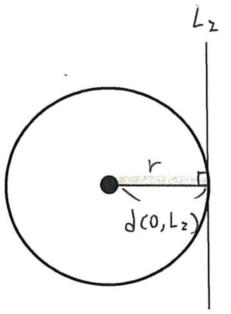
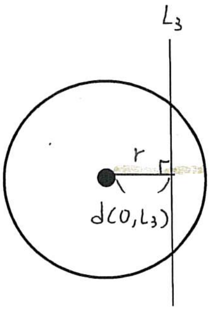
<td>
(If) $d(O,L_1) > r$
→ $L_1 \in$ none intersection point</td>
<td>
(If) $d(O,L_2) = r$
→ $L_2 \in$ tangent
⇒ a intersection point</td>
<td>
(If) $d(O,L_3) < r$
→ $L_3 \in$ secant
⇒ two intersection points</td>
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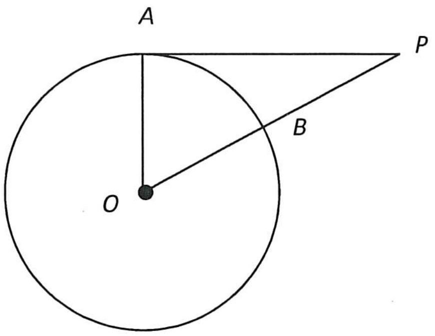
</table>

葉翊暄

單元名稱	Calculate the segments of a tangent and the chord length 計算切線段長與弦長

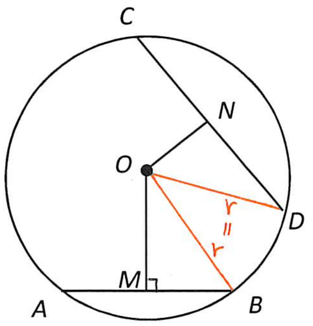
- Calculate the segments of a tangent



$$d(O,P)^2 = (\text{radius})^2 + (\text{the } \overset{\text{線段}}{\underline{\text{segments}}} \text{ of a tangent})^2$$

- Calculate the chord length

$$(\text{radius})^2 = d(O,\text{chord})^2 + \left(\frac{\text{the chord length}}{2}\right)^2$$



＊ if $\overline{OM} > \overline{ON}$

$\rightarrow \overline{AB} < \overline{CD}$

方學晴

單元名稱	Basic concept of circle 圓形基本概念

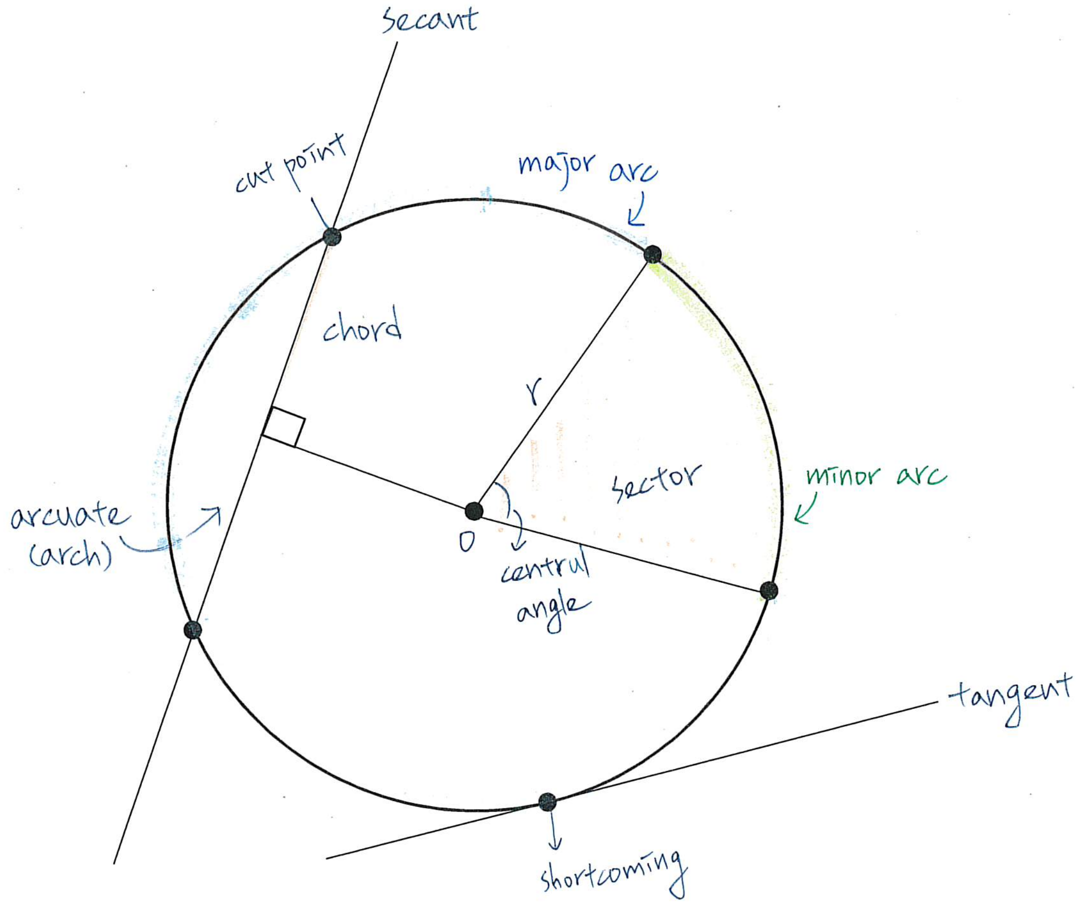
- Definition the circle 圓的定義

A circle is a shape consisting of all points in a plane that are at a given distance from a given point.

radius(r)

center of the circle (O)

- The names of various parts of the circle 圓各部位的名稱



方學晴

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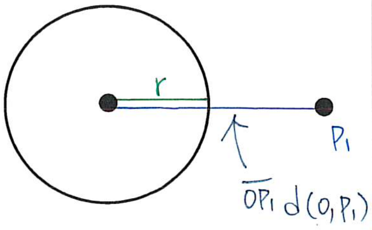
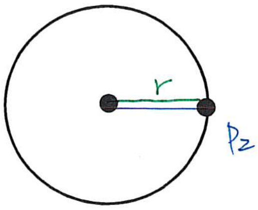
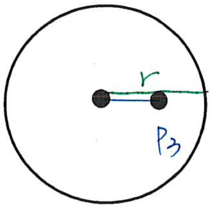
<td>

if $\overline{OP_1} > r \xrightarrow[則]{} P_1 \in$ outer</td>
<td>

if $\overline{OP_2} = r \rightarrow P_2 \in$ on</td>
<td>

if $\overline{OP_3} < r \rightarrow P_3 \in$ inner</td>
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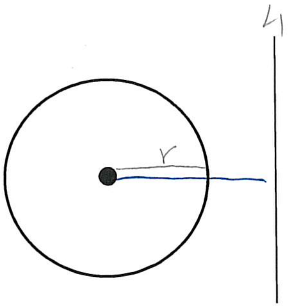
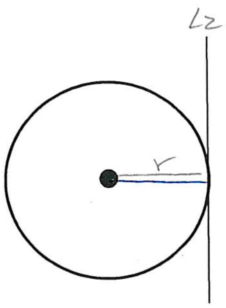
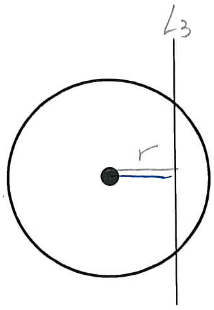
<td>

if $d(O, L_1) > r \rightarrow L_1 \in$ no intersection point</td>
<td>

if $d(O, O_2) = r \rightarrow L_2 \in$ tangent $\Rightarrow$ a intersection point</td>
<td>

if $d(O, L_3) < r \rightarrow L_3 \in$ secant $\Rightarrow$ two intersection points</td>
</tr>
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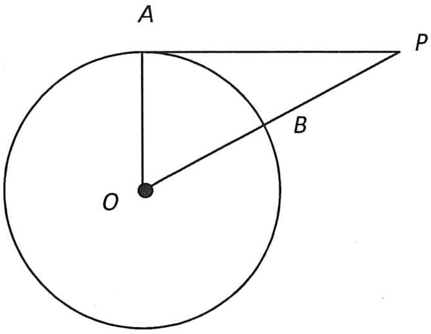
方學晴

單元名稱	Calculate the segments of a tangent and the chord length 計算切線段長與弦長

- Calculate the segments of a tangent

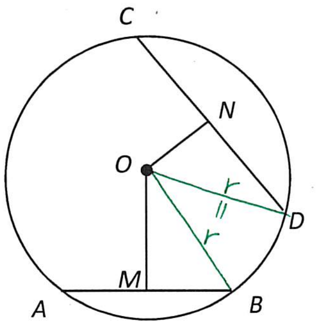


$d(o,p)^2=(\text{radius})^2+(\text{the } \overset{\text{線段}}{\underline{\text{segments}}} \text{ of a tangent})^2$

- Calculate the chord length

$(\text{radius})^2=d(o,\text{chord})^2+(\text{the chord length}/2)^2$

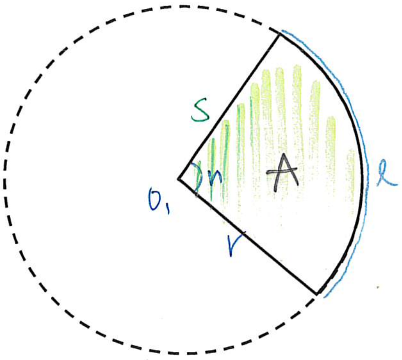
$* \text{ if } \overline{OM}>\overline{ON} \to \overline{AB}<\overline{CD}$



方學晴

單元名稱	The area and perimeter of sectors and arcuates 扇形、弓形的面積與周長

- The area and perimeter of sectors



The area of a sector 扇形 = The area of a circle * radio 比例

radio = center 圓心角 angle / inscribed angle 周角=360°

or radio = arc length / circumference 圓周角

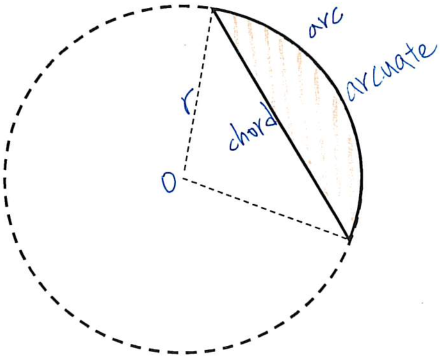
$$\boxed{A=r^2\pi\times\frac{n}{360}=r^2\pi\times\frac{l}{2r\pi}=\frac{r\times l}{2}}$$

The perimeter 周長 of a sector = the arc length + diameter 直徑

the arc length = the circumference * radio

$$S=2r\pi\times\frac{n}{360}+2r$$

- The area and perimeter of arcuates



The area of a arcuate.

= The area of a sector − The area of a triangle

The perimeter of a arcuate

= the arc length + the chord length

90503陳沐荷

單元名稱	Basic concept of circle 圓形基本概念

- Definition the circle 圓的定義

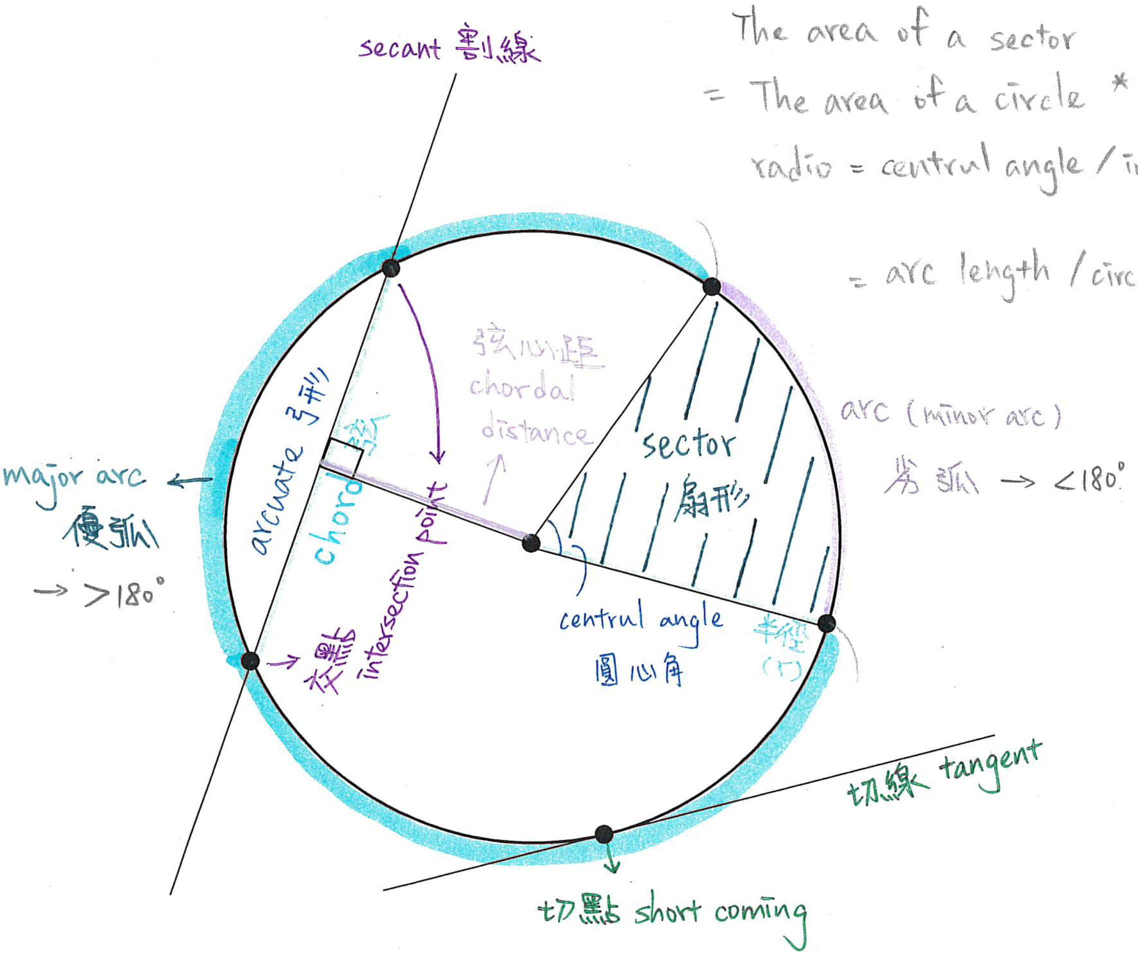
A circle is a shape consisting of all the points in a plane that are at a given distance from a given point.

distance ↓ radius (r)

point ↓ the center of circle

- The names of various parts of the circle 圓各部位的名稱

The area of a sector
= The area of a circle * radio (比例)
radio = centrul angle / inscribed angle
(周角 = 360°)
= arc length / circumference



area of the circle = $r^2\pi$

circumference = 2r (diameter) x π

90505 曾子蓁

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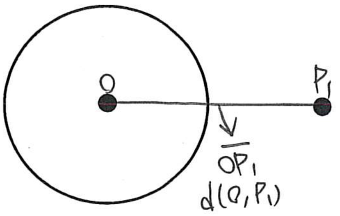
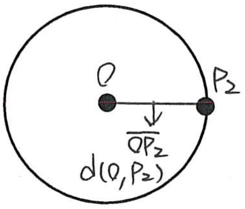
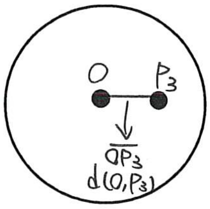
<td>
if $\overline{OP_1} > r$
→ $P_1 \in$ outer 圓外
則</td>
<td>
if $\overline{OP_2} = r$
→ $P_2 \in$ on 圓上</td>
<td>
if $\overline{OP_3} < r$
→ $P_3 \in$ inner 圓內</td>
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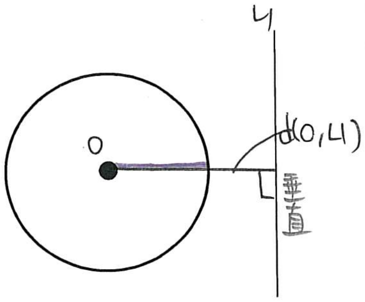
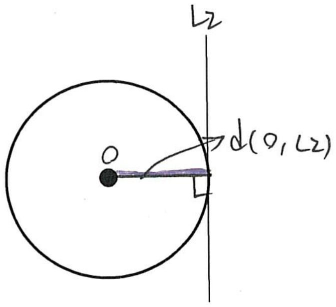
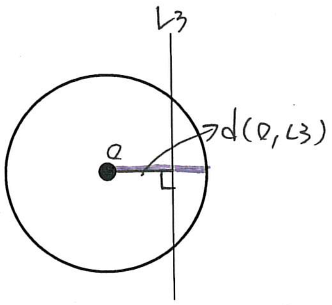
<td>
if $d(O,L_1) > r$
$L_1 \in$ nope intersection point
↳ 沒有焦點</td>
<td>
if $d(O,L_2) = r$
$L_2 \in$ tangent 切線
↳ 一個焦點</td>
<td>
if $d(O,L_3) < r$
$L_3 \in$ secant 割線
↳ 兩個焦點</td>
</tr>
</table>

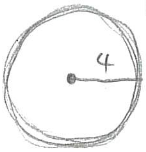
$\in$ = blown to 屬於

2-1 點、線、圓　主題 2 點與圓的位置關係

五 班 5 號
姓名：曾子蓁

概念①　點與圓的位置關係

1. 已知圓 O 半徑爲 4，A、B、C 三點與圓心 O 的距離分別爲 3、4、5，判別 A、B、C 三點與圓 O 的位置關係。（圓外、圓上或圓內）



PA < 4
PB = 4
PC > 4

A: 圓
外 = PC
上 = PB
內 = PA

2. 已知圓 O 半徑爲 5，A、B、C 三點與圓心 O 的距離分別爲 6、5、4，判別 A、B、C 三點與圓 O 的位置關係。（圓外、圓上或圓內）

PA > 5
PB = 5
PC < 5

A: 圓
外 = PA
上 = PB
內 = PC

3. 已知圓 O 半徑爲 6，A、B、C、D 四點與圓心 O 的距離分別爲 10、8、6、2，判別 A、B、C、D 四點與圓 O 的位置關係。（圓外、圓上或圓內）

PA > 6
PB > 6
PC = 6
PD < 6

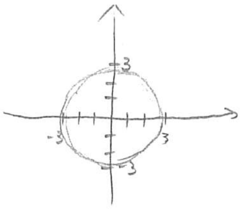
A: 圓
外 = PA.PB
上 = PC
內 = PD

4. 已知圓 O 半徑爲 8，A、B、C、D 四點與圓心 O 的距離分別爲 9、8、7、5，判別 A、B、C、D 四點與圓 O 的位置關係。（圓外、圓上或圓內）

PA > 8
PB = 8
PC < 8
PD < 8

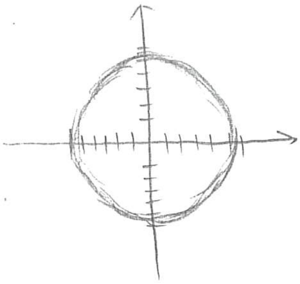
A: 圓
外 = PA
上 = PB
內 = PC、PD

5. 在坐標平面上，若以（0，0）爲圓心，3 爲半徑畫圓，A（0，−3）、B（−3，−2）、C（4，2）三個點中，哪幾個點在圓外？



A = C(4,2)

6. 在坐標平面上，若以（0，0）爲圓心，6 爲半徑畫圓，則 A（4，−3）、B（−1，5）、D（−5，−4）三個點中，哪幾個點在圓內？



A: A (4,-3)
B (-1,5)
D (-5,-4)

7. 在坐標平面上，若以（0，0）爲圓心，10 爲半徑畫圓，則 A（3，4）、B（6，−8）、C（10，0）三個點中，哪幾個點在圓上？

A = C(10,0)

8. 在坐標平面上，若以（0，0）爲圓心，13 爲半徑畫圓，則 A（6，3）、B（−5，12）、C（2，−8）、D（9，10）、E（0，−12）五個點中，哪幾個點在圓內？

A: A (6,3)
B (-5,12)
C (2,-8)
D (9,10)
E (0,-12)

概念①　直線與圓的位置關係

＿＿＿班＿＿＿號

姓名：＿＿＿＿＿

1. 已知圓的半徑爲 5，若三直線 L_1、L_2、L_3 分別與圓心的距離爲 4、5、6，求此三直線與圓的交點個數。

$L_1 < 5$

$L_2 = 5$

$L_3 > 5$

A: $L_1 = 0$, $L_2 = 1$, $L_3 = 2$ 個

2. 已知圓的半徑爲 3.5，若三直線 L_1、L_2、L_3 分別與圓心的距離爲 3、4、5，求此三直線與圓的交點個數。

$L_1 < 3.5$ (V)

$L_2 > 3.5$

$L_3 > 3.5$

A: $L_1 = 2$, $L_2 = 0$, $L_3 = 0$ 個

3. 已知圓的直徑爲 12（r=6），若三直線 L_1、L_2、L_3 分別與圓心的距離爲 5、6、7，求此三直線與圓的交點個數。

$L_1 < 6$

$L_2 = 6$

$L_3 > 6$

A: $L_1 = 2$, $L_2 = 1$, $L_3 = 0$ 個

4. 已知圓的直徑爲 10（5），若三直線 L_1、L_2、L_3 分別與圓心的距離爲 3、4、5，求此三直線與圓的交點個數。

$L_1 < 5$

$L_2 < 5$

$L_3 = 5$

A: $L_1 = 2$, $L_2 = 2$, $L_3 = 1$ 個

5. 已知圓的半徑爲 6，若圓心 O 到三直線 A、B、C 的距離分別爲 8、6、4，則哪一條是切線？哪一條是割線？

A: 切 = $\overline{OB}$, 割 = $\overline{OC}$

6. 已知圓的半徑爲 11，若圓心 O 到三直線 P、Q、R 的距離分別爲 9、12、11，則哪一條是切線？哪一條是割線？

A: 切 = $\overline{OR}$, 割 = $\overline{OP}$

7. 已知圓的直徑爲 14（R=7），若圓心 O 到三直線 A、B、C 的距離分別爲 5、7、9，則哪一條是切線？哪一條是割線？

A: 切 = $\overline{OB}$, 割 = $\overline{OA}$

8. 已知圓的直徑爲 20（10），若圓心 O 到三直線 P、Q、R 的距離分別爲 16、9、10，則哪一條是切線？哪一條是割線？

A: 切 = $\overline{OR}$, 割 = $\overline{OQ}$