

<b>NAME OF LEARNER:</b> <i>NAAM VAN LEERDER:</i>	
<b>CLASS:</b> <i>KLAS:</i>	

**NATIONAL SENIOR CERTIFICATE**  
***NASIONALE SENIOR SERTIFIKAAT***

**MATHEMATICS P2/WISKUNDE V2**

**GRADE/GRAAD 11**

**NOVEMBER 2016**

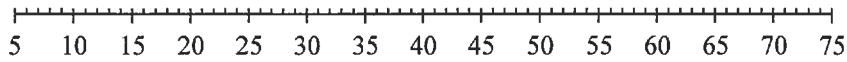
<p><b>SPECIAL ANSWER BOOK</b> <b><i>SPESIALE ANTWOORDEBOEK</i></b></p>
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<b>QUESTION</b> <i>VRAAG</i>	<b>MARK</b> <i>PUNT</i>			<b>INITIAL</b> <i>PARAAF</i>	<b>MODERATION</b> <i>MODERERING</i>			<b>INITIAL</b> <i>PARAAF</i>
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
<b>TOTAL</b> <b><i>TOTAAL</i></b> <b>(150)</b>								

**This answer book consists of 22 pages.**  
***Hierdie antwoordeboek bestaan uit 22 bladsye.***

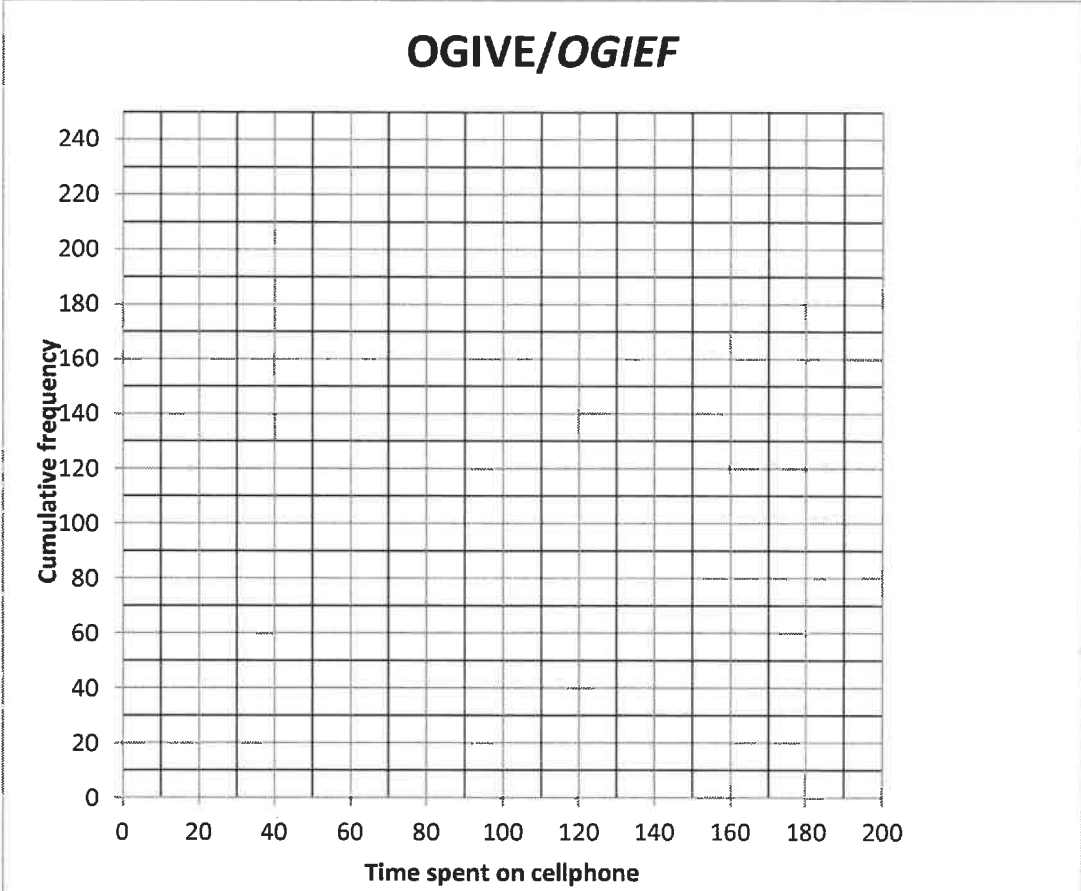
**QUESTION/VRAAG 1**

5	8	15	20	25	27	31	36	75
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	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
1.1		(1)
1.2		(2)
1.3		(1)
1.4		(3)
1.5		(3)

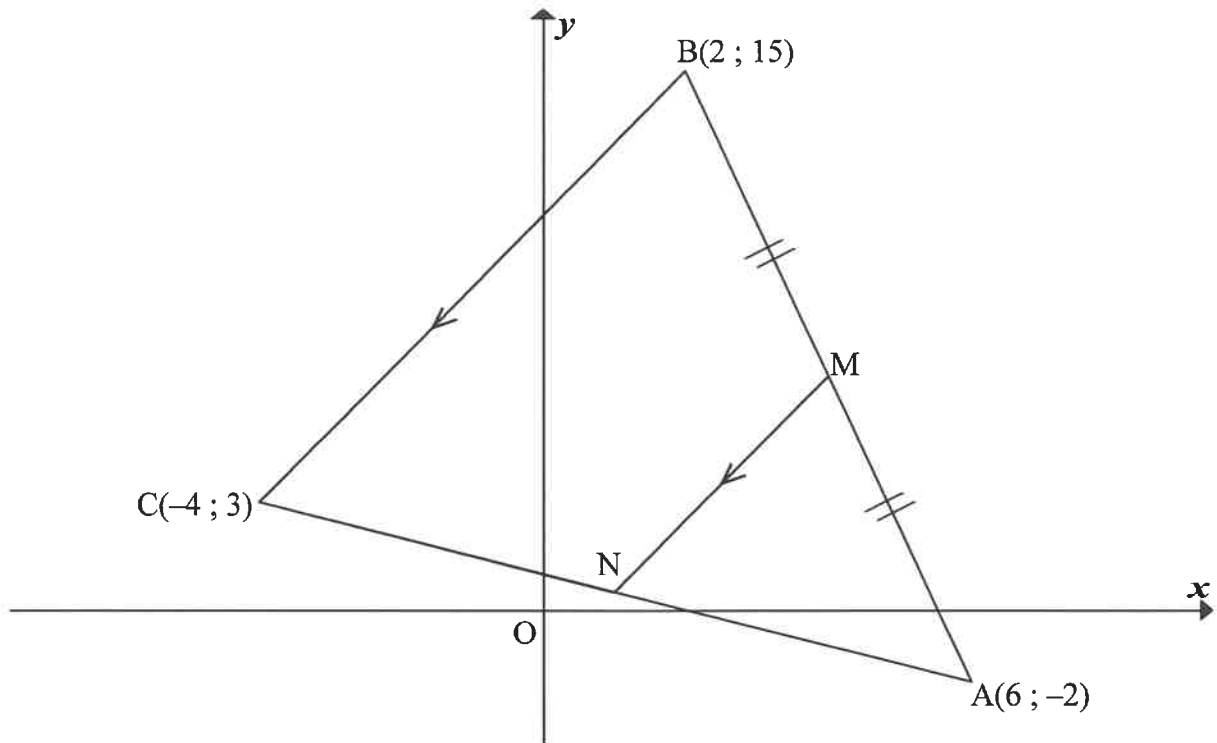
1.6		
		(1)
1.7		
		(1)
		<b>[12]</b>

**QUESTION/VRAAG 2**

	<b>Solution/Oplissing</b>	<b>Marks Punte</b>																											
2.1	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th data-bbox="408 387 715 611"><b>TIME SPENT/ TYD SPANDEER (IN MINUTES/ MINUTE)</b></th> <th data-bbox="715 387 987 611"><b>FREQUENCY/ FREKWENSIE</b></th> <th data-bbox="987 387 1262 611"><b>CUMULATIVE FREQUENCY/ KUMULATIEWE FREKWENSIE</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="408 611 715 674"><math>95 &lt; x \leq 105</math></td> <td data-bbox="715 611 987 674">15</td> <td data-bbox="987 611 1262 674"></td> </tr> <tr> <td data-bbox="408 674 715 736"><math>105 &lt; x \leq 115</math></td> <td data-bbox="715 674 987 736">27</td> <td data-bbox="987 674 1262 736"></td> </tr> <tr> <td data-bbox="408 736 715 799"><math>115 &lt; x \leq 125</math></td> <td data-bbox="715 736 987 799">43</td> <td data-bbox="987 736 1262 799"></td> </tr> <tr> <td data-bbox="408 799 715 862"><math>125 &lt; x \leq 135</math></td> <td data-bbox="715 799 987 862">52</td> <td data-bbox="987 799 1262 862"></td> </tr> <tr> <td data-bbox="408 862 715 925"><math>135 &lt; x \leq 145</math></td> <td data-bbox="715 862 987 925">28</td> <td data-bbox="987 862 1262 925"></td> </tr> <tr> <td data-bbox="408 925 715 987"><math>145 &lt; x \leq 155</math></td> <td data-bbox="715 925 987 987">21</td> <td data-bbox="987 925 1262 987"></td> </tr> <tr> <td data-bbox="408 987 715 1050"><math>155 &lt; x \leq 165</math></td> <td data-bbox="715 987 987 1050">10</td> <td data-bbox="987 987 1262 1050"></td> </tr> <tr> <td data-bbox="408 1050 715 1113"><math>165 &lt; x \leq 175</math></td> <td data-bbox="715 1050 987 1113">4</td> <td data-bbox="987 1050 1262 1113"></td> </tr> </tbody> </table>	<b>TIME SPENT/ TYD SPANDEER (IN MINUTES/ MINUTE)</b>	<b>FREQUENCY/ FREKWENSIE</b>	<b>CUMULATIVE FREQUENCY/ KUMULATIEWE FREKWENSIE</b>	$95 < x \leq 105$	15		$105 < x \leq 115$	27		$115 < x \leq 125$	43		$125 < x \leq 135$	52		$135 < x \leq 145$	28		$145 < x \leq 155$	21		$155 < x \leq 165$	10		$165 < x \leq 175$	4		(2)
<b>TIME SPENT/ TYD SPANDEER (IN MINUTES/ MINUTE)</b>	<b>FREQUENCY/ FREKWENSIE</b>	<b>CUMULATIVE FREQUENCY/ KUMULATIEWE FREKWENSIE</b>																											
$95 < x \leq 105$	15																												
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$135 < x \leq 145$	28																												
$145 < x \leq 155$	21																												
$155 < x \leq 165$	10																												
$165 < x \leq 175$	4																												
2.2	<p style="text-align: center;"><b>OGIVE/OGIEF</b></p> 	(3)																											

2.3		
		(2)
2.4		
		(2)
		<b>[9]</b>

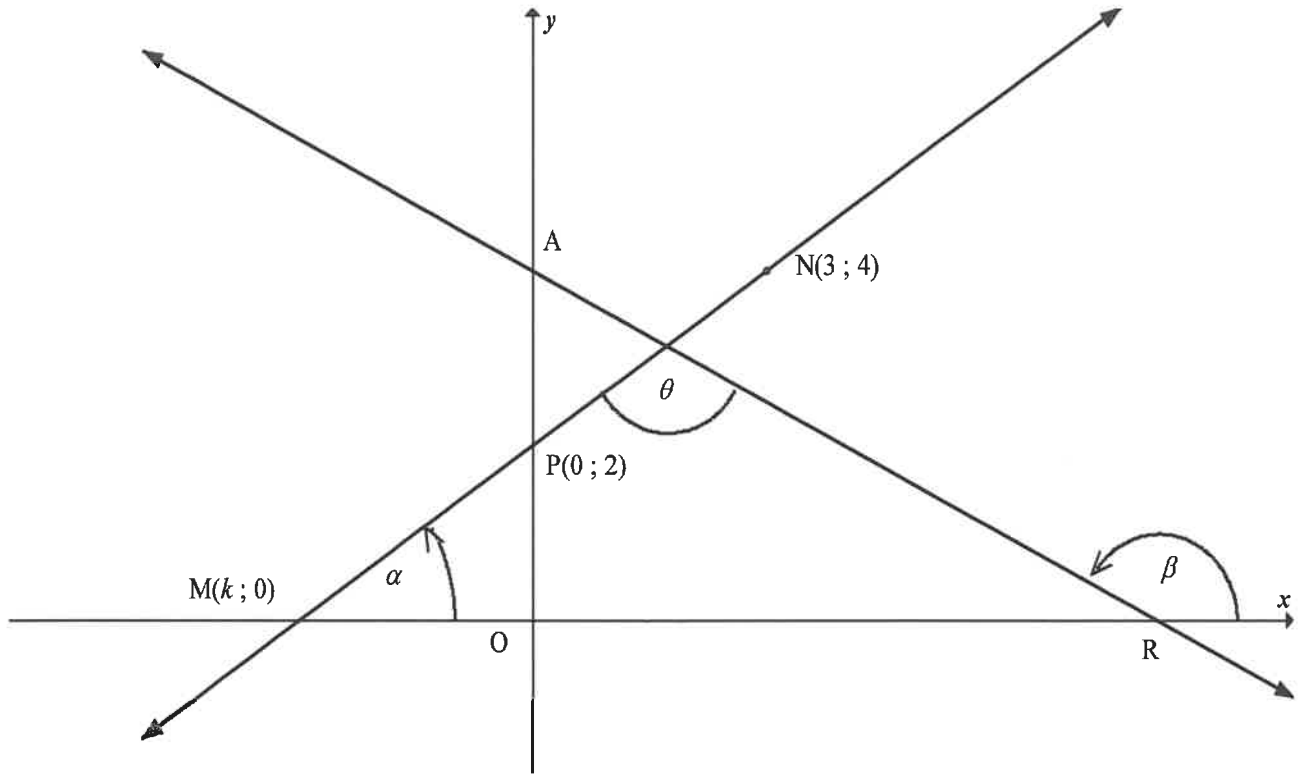
**QUESTION/VRAAG 3**



	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
3.1		(2)
3.2		(3)

	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
3.3		(2)
3.4		(4)
3.5		(4)
		<b>[15]</b>

**QUESTION/VRAAG 4**



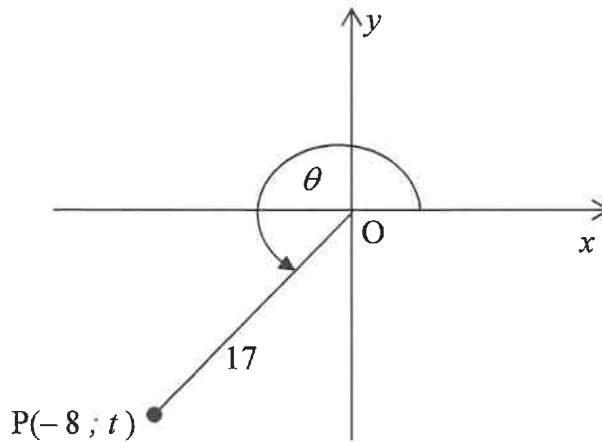
	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
4.1		(3)
4.2		(4)



	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
4.3		
4.4		
		<b>[13]</b>

**QUESTION/VRAAG 5**

5.1

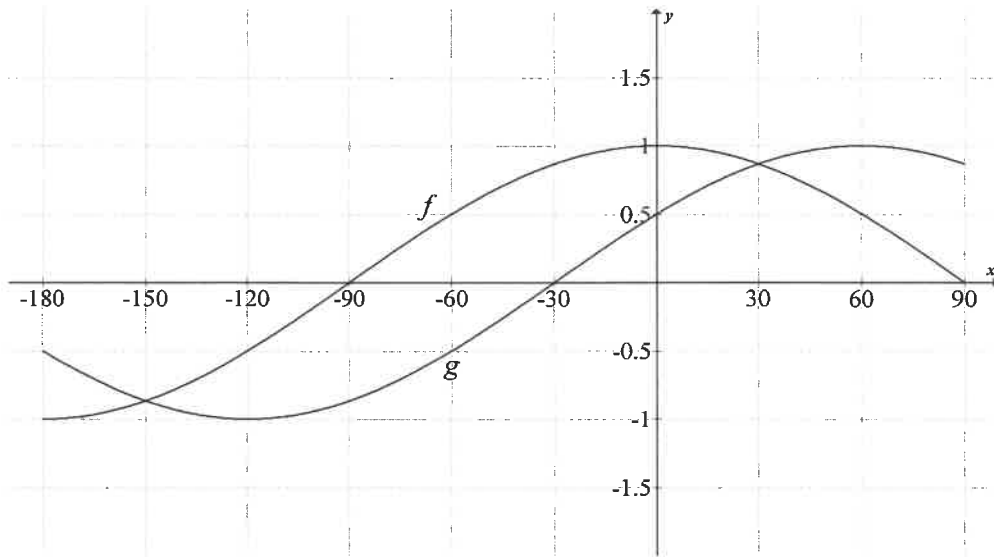


	<b>Solution/Oplossing</b>	<b>Marks Punte</b>
5.1.1		(2)
5.1.2(a)		(2)
5.1.2(b)		(2)
5.2.1		(3)

	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
5.2.2		(2)
5.2.3		(4)
5.3		(6)

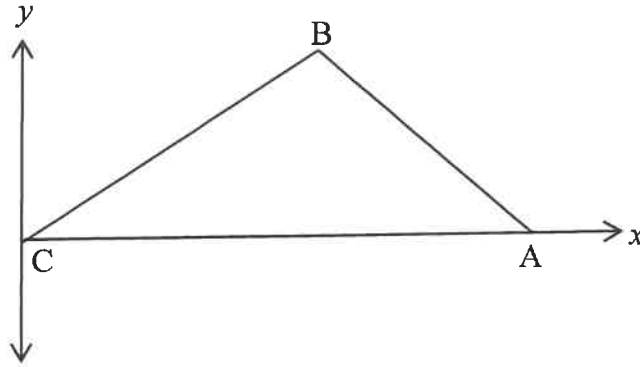
	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
5.4		
5.5		
		<b>(6)</b> <b>[31]</b>

**QUESTION/VRAAG 6**

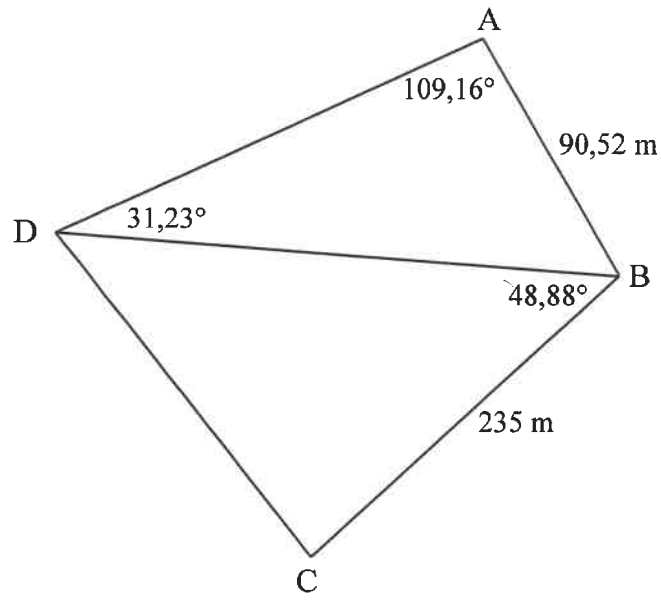


	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
6.1		(1)
6.2		(1)
6.3		(2)
6.4		(3)
6.5		(2)
		<b>[9]</b>

**QUESTION/VRAAG 7**

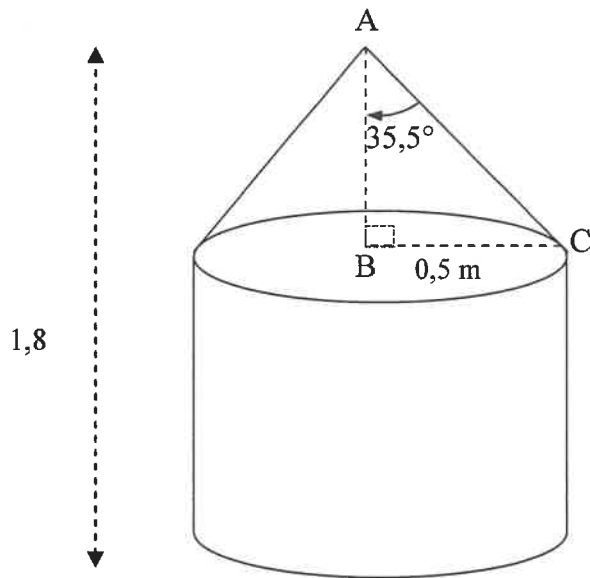


	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
7.1.1		(6)
7.1.2		(4)



7.2.1		(3)
7.2.2		(3)
		[16]

**QUESTION/VRAAG 8**



Volume of cone =  $\frac{1}{3} \pi r^2 h$   
 Total surface area of cone =  $\pi r^2 + \pi r s$   
 Volume of cylinder =  $\pi r^2 h$   
 Total surface area of cylinder =  $2\pi r^2 + 2\pi r h$

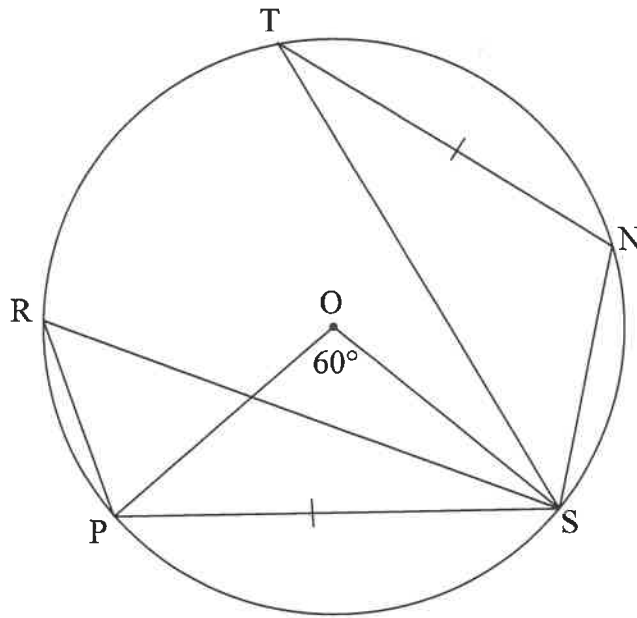
Volume van keël =  $\frac{1}{3} \pi r^2 h$   
 Totale oppervlakarea van keël =  $\pi r^2 + \pi r s$   
 Volume van silinder =  $\pi r^2 h$   
 Totale oppervlakarea van silinder =  $2\pi r^2 + 2\pi r h$

	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
8.1		(2)
8.2		(4)
		<b>[6]</b>



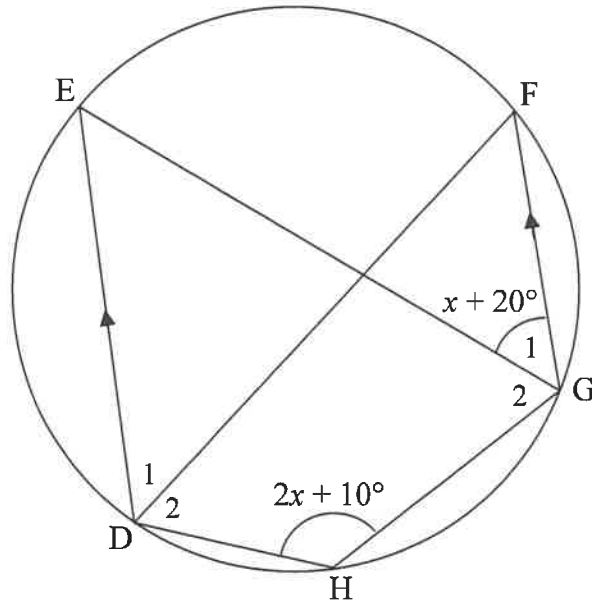
Give reasons for your statements and calculations in QUESTIONS 9, 10, 11 and 12.  
 Gee redes vir jou bewerings en berekeninge in VRAAG 9, 10, 11 en 12.

**QUESTION/VRAAG 9**



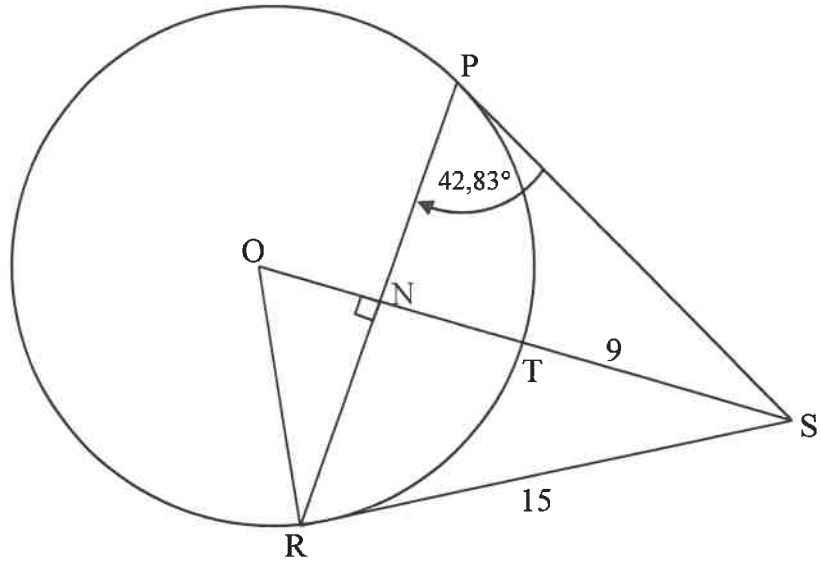
	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
9.1		(2)
9.2.1		(2)
9.2.2		(2)
		<b>[6]</b>

**QUESTION/VRAAG 10**



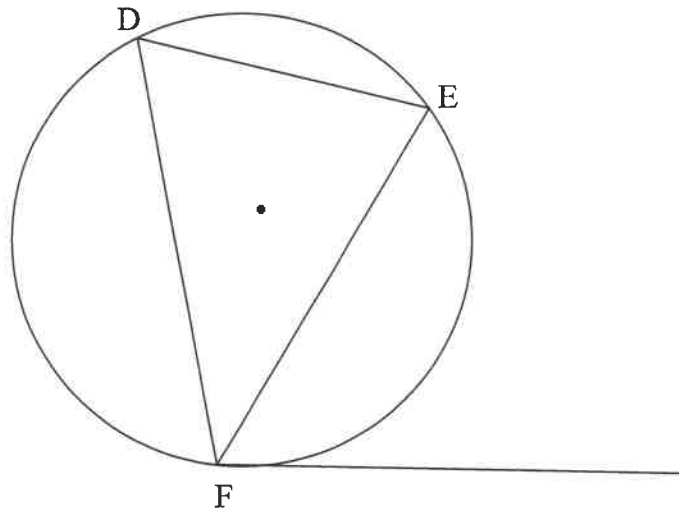
	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
10.1		(2)
10.2		(4) <b>[6]</b>

**QUESTION/VRAAG 11**

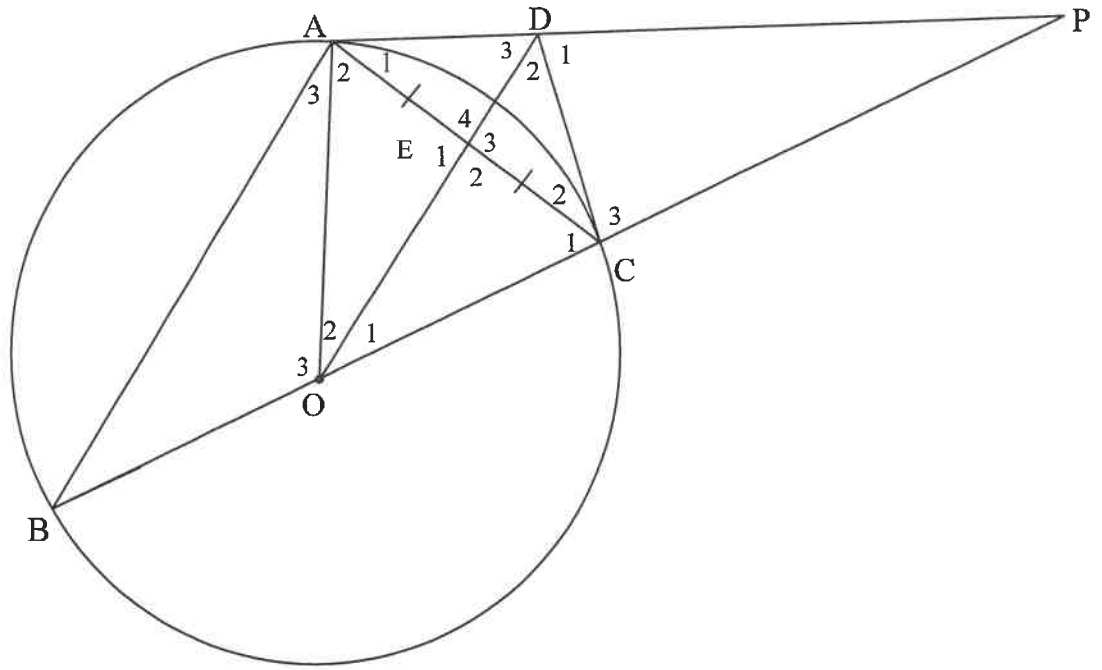


	<i>Solution/Oplissing</i>	<b>Marks Punte</b>
11.1		(5)
11.2		(4)
		<b>[9]</b>

**QUESTION/VRAAG 12**



	<b>Solution/Oplissing</b>	<b>Marks Punte</b>
12.1		(5)



12.2.1		
		(4)
12.2.2		
		(5)
12.2.3		
		(4)
		[18]

**TOTAL/TOTAAL: 150**

	<b>Additional space/Bykomende ruimte</b>	<b>Marks Punte</b>