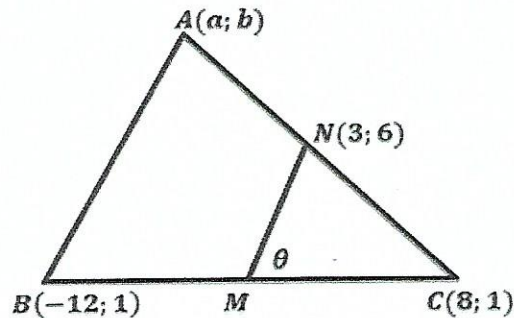




AFDELING A

VRAAG 1

$A(a; b)$, $B(-12; 1)$ en $C(8; 1)$ is die hoekpunte van $\triangle ABC$. M is die middelpunt van BC en $N(3; 6)$ is die middelpunt van AC .



1.1 Bepaal die koördinate van M .

(2)

1.2 Toon aan dat die koördinate van A $(-2; 11)$ is.

(4)

1.3 Bereken die grootte van $\hat{NMC}$.

(4)

1.4 Bereken die lengte van MN in eenvoudigste wortelvorm.

(2)

1.5 Skryf die lengte van AB neer deur 'n rede te gee, maar sonder om enige verdere berekeninge te doen.

(2)

1.6

1.6.1 Toon aan dat $\hat{BAC} = 90^\circ$.

(3)

1.6.2 Vervolgens, bepaal die vergelyking van die omgeskrewe sirkel van $\triangle ABC$

(3)

[20]

SECTION A

QUESTION 1

$A(a; b)$, $B(-12; 1)$ and $C(8; 1)$ are the vertices of $\triangle ABC$. M is the midpoint of BC and $N(3; 6)$ is the midpoint of AC .

1.1 Determine the coordinates of M .

(2)

1.2 Show that the coordinates of A is $(-2; 11)$.

(4)

1.3 Calculate the size of $\hat{NMC}$.

(4)

1.4 Calculate the length of MN in simplest surd form.

(2)

1.5 Write down the length of AB by giving a reason, but without doing any further calculations.

(2)

1.6

1.6.1 Show that $\hat{BAC} = 90^\circ$.

(3)

1.6.2 Hence, determine the equation of the circumscribed circle of $\triangle ABC$.

(3)

[20]





VRAAG 2

2.1 As $\theta = 59,4^\circ$, bereken die waardes van die volgende, afgerond tot een desimale getal:

2.1.1 $\cos 2\theta$ (1)

2.1.2 $\hat{A}$ as $\tan A = \cos \theta$
vir alle $A \in [0^\circ; 360^\circ]$. (3)

2.2 Vereenvoudig so ver as moontlik:

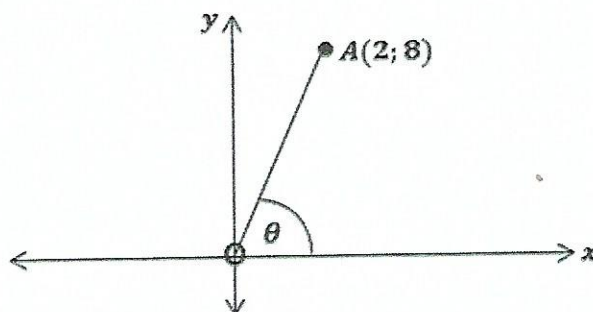
$$\frac{\cos(-180^\circ - x) \cdot \tan(360^\circ - x) \cdot \cos^2(90^\circ - x)}{\sin(180^\circ - x) \cdot \sin(-x) \cdot \sin(1080^\circ + x)} \quad (7)$$

[11]

VRAAG 3

3.1 Voltooi: $\cos(A - B) = \dots$ (1)

3.2 Verwys na die onderstaande figuur:



Bereken die waarde van $\cos(\theta - 60^\circ)$, sonder die gebruik van 'n sakrekenaar. Laat jou antwoord in eenvoudigste wortelvorm.

(5)

3.3 As $\sin 14^\circ = p$, druk die volgende uit in terme van p :

3.3.1 $\sin 194^\circ$ (1)

3.3.2 $\frac{1}{\cos 76^\circ}$ (2)

3.3.3 $\tan 14^\circ$ (3)

3.3.4 $\sin 97^\circ \cdot \sin(-7^\circ)$ (4)

QUESTION 2

2.1 If $\theta = 59,4^\circ$, calculate the values of the following, rounded off to one decimal value:

2.1.1 $\cos 2\theta$ (1)

2.1.2 $\hat{A}$ if $\tan A = \cos \theta$
for all $A \in [0^\circ; 360^\circ]$. (3)

2.2 Simplify as far as possible:

QUESTION 3

3.1 Complete: $\cos(A - B) = \dots$ (1)

3.2 Refer to the figure below:

Calculate the value of $\cos(\theta - 60^\circ)$, without the use of a calculator. Leave your answer in simplest surd form.

(5)

3.3 If $\sin 14^\circ = p$, express the following in terms of p :



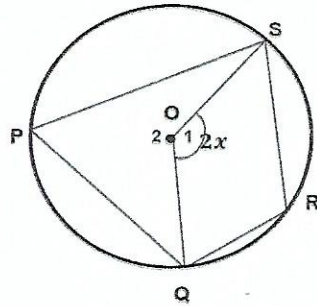


VRAAG 4

- 4.1 Gebruik die onderstaande skets van sirkel PQRS met middelpunt O, om die volgende stelling te bewys:
"Die teenoorstaande binnehoeke van 'n koordevierhoek is supplementêr."

QUESTION 4

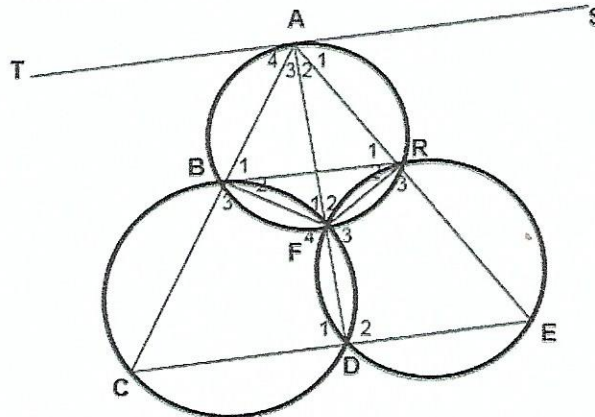
- 4.1 Use the sketch of circle PQRS with centre O below, to prove the following theorem:
"The opposite interior angles of a cyclic quadrilateral are supplementary."



(5)

- 4.2 In die onderstaande skets is TS 'n raaklyn aan die sirkel met middellyn AF. AFD is 'n reguit lyn. ABFR, BFDC en DERF is koordevierhoeke. ABC en ARE is beide reguit lyne.

- 4.2 In the sketch below TS is a tangent to the circle with diameter AF. AFD is a straight line. ABFR, BFDC and DERF are cyclic quadrilaterals. ABC and ARE are both straight lines.



Voltooi die bewyse in jou Antwoordboek deur in elke geval redes vir die gegewe bewerings te gee.

Complete the proof in your Answer Book by giving reasons for the given statements in each case.

Bewys dat:

Prove that:

- 4.2.1 CDE 'n reguit lyn is. (3)
4.2.2 BCER 'n koordevierhoek is. (3)
4.2.3 $AS \parallel CE$ (3)
4.2.4 $\frac{AR}{AB} = \frac{AC}{AE}$ (2)

- 4.2.1 CDE is a straight line. (3)
4.2.2 BCER is a cyclic quadrilateral. (3)
4.2.3 $AS \parallel CE$ (3)
4.2.4 $\frac{AR}{AB} = \frac{AC}{AE}$ (2)

[16]

[16]



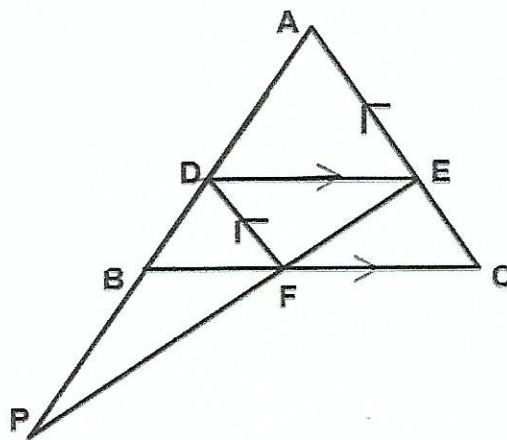


VRAAG 5

In die onderstaande skets is $DE \parallel BC$ en $DF \parallel AC$. PFE is 'n reguit lyn.

QUESTION 5

In the sketch below $DE \parallel BC$ and $DF \parallel AC$. PFE is a straight line.



5.1 Voltooi die volgende in $\triangle ABC$:

5.1 Complete the following in $\triangle ABC$:

5.1.1 $\frac{AD}{DB} =$ (2)

5.1.2 $\frac{BF}{FC} =$ (2)

5.1.3 Vervolgens, bepaal die waarde van:

5.1.3 Hence, determine the value of:

$\frac{AE}{EC} \times \frac{BF}{FC}$ (2)

5.2 As F die middelpunt van EP is, bepaal die waarde van:

5.2 If F is the midpoint of EP, determine the value of:

$\frac{PD}{DA}$ (2)

[8]

VRAAG 6

Die onderstaande stel data pare is punte behaal deur 15 leerders in Wiskunde en Wetenskaptoetse. Beide is uit 70. Die Wiskunde punte verskyn eerste:

QUESTION 6

The set of data pairs below are marks achieved by 15 learners in Mathematics and Science tests. Both are out of 70. The Mathematics results appear first:

(20 ; 25)	(16 ; 20)	(55 ; 35)	(32 ; 35)	(43 ; 40)
(44 ; 44)	(49 ; 41)	(64 ; 47)	(12 ; 15)	(36 ; 29)
(55 ; 50)	(28 ; 23)	(60 ; 56)	(69 ; 61)	(44 ; 32)





- 6.1 Teken 'n speidingsdiagram van die data. (3)
- 6.2 Bepaal die vergelyking van die lineêre regressielyn en die waarde van die korrelasie koëffisiënt r , wat die verhouding tussen die resultate van die twee vakke beskryf. (2)
- 6.3 'n Tweede opsie word gegee om die verhouding tussen Wiskunde en Wetenskap se toets uitslae te beskryf:

- 6.1 Draw a scatter plot of the data. (3)
- 6.2 Determine the equation of the linear regression line and the value of the correlation coefficient r , that describes the relationship between the results of the two subjects. (2)
- 6.3 A second option is supplied to describe the relationship between the Mathematics and Science test results:

$$y = 0,003x^2 + 0,4779x + 11,077$$

Kies tussen 6.2 en 6.3 die opsie wat die data die beste beskryf en gee 'n rede vir jou keuse.

(2)

[7]

TOTAAL AFDELING A: [78]

Choose from 6.2 and 6.3 the option that describes the data best and give a reason for your choice.

(2)

[7]

TOTAL SECTION A: [78]

AFDELING B

VRAAG 7

- 7.1 Die onderstaande ogief toon die Wiskundetoets uitslae vir Klas A en Klas B:

SECTION B

QUESTION 7

- 7.1 The ogive below displays the Mathematics test results for Class A and Class B:

