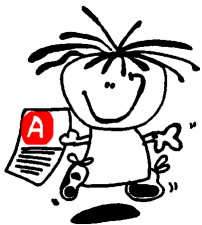


GR 8 WISKUNDE

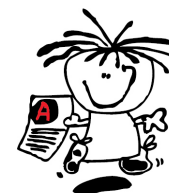
EKSAMENVRAESTELLE & MEMO'S

	Eksamen vraestelle	Eksamen memo's
Vraestel 1	1	M1
Vraestel 2	3	M3



Ons vertrou dat die deurwerk van hierdie eksamen vraestelle en die volg van ons breedvoerige antwoorde, sowel as kommentaar jou sal help om deeglik vir jou finale eksamen voor te berei.

Die Antwoord-reeks Wiskunde studiegids bied 'n sleutel tot eksamensukses.



die
ANTWOORD
reeks ... jou sleutel tot eksamen sukses



GR 8 WISKUNDE V 1

1½ uur
100 punte

Onthou: **GEEN SAKREKENAAR**



1.

	Natuurlik	Heelgetal	Rasionaal	Irrasionaal	Reëel	Denkbeeldig
-3		✓	✓		✓	
4π				✓	✓	
$\sqrt{-7}$						✓
$\sqrt{36}$	✓	✓	✓		✓	

2.1 $60 \leftarrow \dots$ $10 = 2 \times 5$ en $12 = 2^2 \times 3$
 $\therefore KGV = 2^2 \times 3 \times 5$
 OF $10, 20, 30, 40, 50, 60, 70, \dots$
 $12, 24, 36, 48, 60, 70, \dots$



2.2 **[Let Wel: Geen sakrekenaar!]**

$\sqrt{169} = 13 \dots 13^2 = 169$

$\therefore \sqrt{163} < 13$

$\therefore 13,2$ is groter as $\sqrt{163} \leftarrow$



2.3 $\sqrt{8} < \sqrt{9} = 3$ en $\sqrt{80} < \sqrt{81} = 9$

$\therefore$ Die telgetalle tussen $\sqrt{8}$ en $\sqrt{80}$ is:
 $3; 4; 5; 6; 7; 8$

$\therefore$ Die **aantal** telgetalle = **6** $\leftarrow$

*Maak seker dat
jy die vraag
beantwoord!*

2.4 Die kleinste produk
 $= (-7) \times 3 = -21 \leftarrow \dots$ *Probeer & tref*



*Die kleinste sal die getal verste
links op die getalrelyn wees!*

2.5 $F_{18} = 1; 2; 3; 6; 9; 18 \leftarrow$

2.6 $\frac{10^7}{5 \times 10^4} = \left[\frac{10 \times 10 \times 10 \times \cancel{10} \times \cancel{10} \times \cancel{10} \times \cancel{10}}{5 \times \cancel{10} \times \cancel{10} \times \cancel{10} \times \cancel{10}} \right]$
 $= \frac{10^3}{5}$
 $= \frac{1000}{5}$
 $= 200 \leftarrow$



2.7 $36 - 1$
 $= 35 \leftarrow \dots$ *Moontlikhede:*
 $36 \& 1; 18 \& 2; 12 \& 3; 9 \& 4; 6 \& 6$

3.1.1 $1\frac{1}{2} + 3\frac{2}{3}$
 $= \frac{3}{2} + \frac{11}{3}$
 $= \frac{9 + 22}{6}$
 $= \frac{31}{6}$
 $= 5\frac{1}{6} \leftarrow$

3.1.2 $1\frac{5}{16} \div 2\frac{11}{12}$
 $= \frac{21}{16} \div \frac{35}{12}$
 $= \frac{21}{16} \times \frac{12}{35}$
 $= \frac{3 \times 3}{4 \times 5}$
 $= \frac{9}{20} \leftarrow$

3.2

A: $\frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2} \neq \frac{1}{9}$

B: $\frac{1}{6} - \frac{1}{4} = \frac{2}{12} - \frac{3}{12} = -\frac{1}{12} \neq \frac{1}{2}$

C: $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12} = 12^{\boxed{?}} \checkmark$

D: $\frac{1}{10} \div \frac{1}{5} = \frac{1}{10} \times \frac{5}{1} = \frac{1}{2} = 2^{\boxed{?}} \checkmark$

C en **D** is waar $\leftarrow$

4.1 Die aantal katte = $\frac{3}{2+3+30}$ van 385
 $= \frac{3}{1 \cancel{35}} \times \frac{385}{1}^{11}$
 $= \frac{3 \times 11}{1 \times 1}$
 $= 33 \leftarrow$



4.2 **Wenk:**
Teken 'n diagram!



44 aartappels wat geskil word											
Minute	1 ^{ste}	2 ^{de}	3 ^{de}	4 ^{de}	5 ^{de}	6 ^{de}	7 ^{de}	8 ^{ste}	9 ^{de}	10 ^{de}	11 ^{de}
Aartappels geskil deur:											
Matthew	3	3	3	3	3	3	3	3	3	3	3
Charles					5	5	5	5	5	5	5
Totaal geskil	3	6	9	12	20	28	36	44			

Aantal aartappels wat Charles geskil het = $4 \times 5 = 20 \leftarrow$



Let Wel: Totaal van 44 aartappels is geskil teen die 8^{ste} minuut.

OF Aantal aartappels geskil

► in die 1^{ste} 4 minute: $4 \times 3 = 12 \dots$ Matthew

► & daarna:

$3 + 5 = 8$ per minuut $\dots$ Matthew & Charles

vir die oorblywende

$44 - 12 = 32$ aartappels

$\therefore 4$ minute

$\frac{32 \text{ aartappels}}{8 \text{ per min}}$



$\therefore$ Aantal aartappels geskil deur Charles = $4 \times 5 = 20 \leftarrow$

4.3 $\frac{x}{y} \times \frac{y}{z} = \frac{2}{3} \times \frac{7}{5} \dots$
 $\therefore \frac{x}{z} = \frac{14}{15}$
 $\therefore \frac{z}{x} = \frac{15}{14} \leftarrow$



Let op die moontlikheid om y te verwyder deur kansellering.

As breuke gelyk is, dan is die inverses ook gelyk.

$$5. \quad 3x - 4x^2 + 2x^3 - 1$$

$$5.1 \quad 3^{\text{de}} \quad 5.2 \quad 2 \quad 5.3 \quad -1$$

$$5.4 \quad \text{As } x = 1, \text{ die uitdr.} = 3(1) - 4(1)^2 + 2(1)^3 - 1$$

$$= 3 - 4 + 2 - 1$$

$$= 0$$

Die hakies is baie belangrik!

$$5.5 \quad 2x^3 - 4x^2 + 3x - 1$$

$$6.1 \quad -4x + 6x - x = x \quad 6.2 \quad -6x^2 - (-x^2) = -6x^2 + x^2 = -5x^2$$

$$6.3 \quad -4(x + 2y) = -4x - 8y \quad 6.4 \quad \sqrt[3]{27x^{27}} = 3x^9$$

$$6.5 \quad -3x^2y \times 4xy^3 = -12x^3y^4 \quad 6.6 \quad -(2x^2)^3 = -8x^6$$

$$6.7 \quad \frac{4x^4}{16x^{16}} = \frac{1}{4x^{12}} \quad 6.8 \quad 3x - x(2x + 1) = 3x - 2x^2 - x = -2x^2 + 2x$$

$$6.9 \quad \frac{6x^3 \times (-4x^2)}{-12x} - (2x)^4 = \frac{-24x^5}{-12x} - (2x)^4 = 2x^4 - 16x^4 = -14x^4$$



$$7.1 \quad -3a \quad -3a = -3(-2) = 6; \quad 4a = 4(-2) = -8;$$

$$\frac{24}{a} = \frac{24}{-2} = -12; \quad a^2 = (-2)^2 = 4$$

$$7.2 \quad 4x - y - 2z \quad 3x - (-x) = 3x + x = 4x \\ -4y - (-3y) = -4y + 3y = -y \\ -z - (+z) = -z - z = -2z$$

$$7.3 \quad -5xy^2(4x^3 - xy^3) = -20x^4y^2 + 5x^2y^5$$

Distributiewe eienskap:
 $a(b + c) = ab + ac$

$$7.4 \quad \frac{9x^3y^2 - 27xy^4}{-9xy^2} = \frac{9x^3y^2}{-9xy^2} - \frac{27xy^4}{-9xy^2} = -x^2 + 3y^2$$

Let Wel: Elke TERM in die teller moet oor die noemer geplaas word.

$$8.1.1 \quad -\frac{12}{x} = -3$$

Deur inspeksie, $x = 4 \quad \dots -12 \div ? = -3$

$$8.1.2 \quad x^2 = 25 \quad \therefore x = \pm 5$$

Let Wel: $5^2 = 25$
Maar, ook, $(-5)^2 = 25$



$$8.1.3 \quad 2x - 3 = 5 \quad \therefore 2x - 3 + 3 = 5 + 3 \\ \therefore 2x = 8 \quad \therefore \frac{2x}{2} = \frac{8}{2} \quad \therefore x = 4$$

$$8.1.4 \quad -3(2x + 3) = 4x - 4 \quad \therefore -6x - 9 = 4x - 4 \\ \therefore -6x - 9 + 9 = 4x - 4 + 9 \quad \therefore -6x = 4x + 5 \\ \therefore -6x - 4x = 4x + 5 - 4x \quad \therefore -10x = 5 \\ \therefore \frac{-10x}{-10} = \frac{5}{-10} \quad \therefore x = -\frac{1}{2}$$



$$8.2.1 \quad x - 5 + 2x = -14 \quad \therefore 3x - 5 + 5 = -14 + 5 \\ \therefore 3x = -9 \quad \therefore \frac{3x}{3} = \frac{-9}{3} \quad \therefore x = -3$$

M2

8.2.2

Let Wel: Die vergelyking het $\sqrt[3]{2y+1}$ in die plek van x , soos in V 8.2.1.



$$\sqrt[3]{2y+1} = -3 \quad \dots \text{dieselfde oplossing as in V 8.2.1}$$

$\therefore 2y + 1 = -27 \quad \dots$ **verhef beide kante tot die mag 3**

$\therefore 2y + 1 - 1 = -27 - 1 \quad \dots$ **trek 1 af aan beide kante**

$$\therefore 2y = -28$$

$$\therefore \frac{2y}{2} = \frac{-28}{2} \quad \dots \text{deel deur 2 aan beide kante}$$

$$\therefore y = -14$$

$$8.3 \quad \text{As } 3x - 7 = 38$$

$$\text{dan is } 3x = 45$$

$$\text{dan is } x = 15,$$

$\therefore$ Jonathan se antwoord was 15, maar die onderwyser se antwoord is 6 minder, d.w.s. 9

Vir x om gelyk te wees aan 9, moet $5x = 45$

$\therefore$ die koëffisiënt van x moes 5 wees

Doen dit deur inspeksie:
Watter getal $-7 = 38$?
3 keer watter getal $= 45$?

$$9.1.1 \quad 11; 8; 5; 2; -1 \quad \dots \text{trek 3 af}$$

$$9.1.2 \quad 3; 6; 12; 24; 48 \quad \dots \text{verdubbel, d.w.s. } \times 2$$

$$9.1.3 \quad 4; \quad ; 6; \quad ; 8; \quad ; 10; \quad ; 12$$

Let Wel:

Daar is eintlik twee verskillende patrone

4; 1; 6; 2; 8; 4; 10; 8; ...

$\Rightarrow$ ewe getalle begin by 4: **4; 6; 8; 10; ...**

$\Rightarrow$ die magte van 2: **1; 2; 4; 8; ...**

(d.w.s. $2^0; 2^1; 2^2; 2^3; \dots$)

Die VOLGENDE term is dus?

EKSAMENMEMO'S

9.2 Die aantal swart vierkante

in die 1^{ste} ry: 0in die 2^{de} ry: 1in die 3^{de} ry: 2in die 4^{de} ry: 3in die 37^{ste} ry: **36** ◀ ... 1 minder as die rynommer.*'n Patroon word hier gesien.
Die aantal swart vierkante
is altyd ... ?*

9.3

Daar is 'n konstante verskil van 6 tussen die terme.
Dus, vergelyk die ry met die reeks van veelvoude van 6:

6 : 12 ; 18 ; 24 ; 30 ; ...

Elke term (in die gegewe ry) is 1 minder.

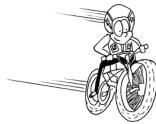
∴ Die 201^{ste} term = $201 \times 6 - 1 = 1\,205$.∴ Die verskil tussen die 201^{ste} term en
die eerste term = $1\,205 - 5 = 1\,200$ ◀

10.1 1 km ◀ 10.2 5 minute ◀ 10.3 15h25 ◀

10.4 3 km in 15 minute

∴ 12 km in 1 uur

d.w.s. Speed = 12 km/h ◀



11.

	Begin	Na eerste transformasie	Na tweede transformasie
A	(-4; -1)	(1; -3)	(1; 3)
B	(3; -5)	(-5; -3)	(-2; 2)
C	(4; 8)	(1; 2)	(-1; 2)

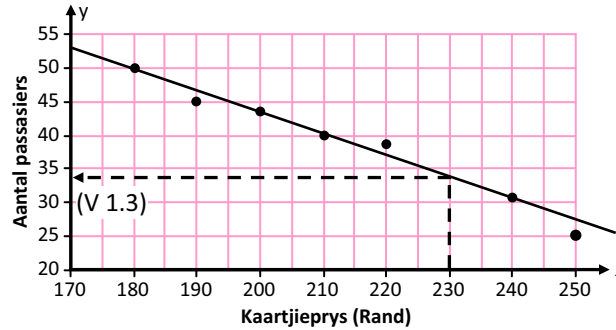
Baie geluk! **C** bereik die skat!

GR 8 WISKUNDE V 2

1½ uur

100 punte

1.1 & 1.2

1.3 omtrent 34 passasiers ◀ ... *sien bostaande grafiek*2.1.1 Die omvang = $8 - 0$
= 8 dae ◀

2.1.2 Die gemiddelde

$$= \frac{2 \times 0 + 5 \times 1 + 2 \times 2 + 4 \times 3 + 2 \times 4 + 1 \times 5 + 2 \times 6 + 1 \times 7 + 1 \times 8}{20}$$

$$= \frac{61}{20}$$

$$= 3,05$$
 ◀



2.1.3 Rangskik die 20 tellings:

0; 0; 1; 1; 1; 1; 1; 1; 2; 2; 3; 3; 3; 3; ...

∴ Die mediaan = 3 ◀ ... *Die gemiddelde van die 10^{de} en 11^{de} terme.*2.1.4 Die modus = 1 ◀ ... *Die telling wat die meeste voorkom.*

2.1.5 Donderdag ◀

2.2 Aantal eenhede English Toffee

$$= \frac{108^\circ}{360^\circ} \times 180$$

$$= 54 \text{ eenhede} \leftarrow$$

*'n Omwenteling
is 360°*3.1 Koste van die kaartjie = $900 \times 10,93 = R9\,837$ ◀3.2 Die formule: $A = P(1 + in)$

waar A = die finale bedrag;

P = die aanvanklike bedrag;

i = die rentekoers per jaar;

n = die aantal jaar

$$\therefore 18\,500 = P \left[1 + \left(\frac{17}{100} \right) \left(\frac{5}{2} \right) \right]$$

$$\therefore 18\,500 = P(1,425)$$

$$\therefore \frac{18\,500}{1,425} = \frac{P(1,425)}{1,425}$$

$$\therefore P = R12\,982,46$$
 ◀



4.1 Die prys voor BTW

$$= R520 \div 1,14$$

$$= R456,14$$
 ◀

*BTW prys ingesluit
= oorspronklike prys $\times$ 1,14*

4.2.1 Die deposito = 10% van R5 170

$$= R517 \leftarrow \dots 10\% = \frac{1}{10} \text{ OF } 0,1$$

4.2.2 Die balans = $R5\,170 - R517 = R4\,653$

∴ Nadat die deposito betaal is, is die totale bedrag

$$= 4\,653 + 3 \times 9\% \times 4\,653$$

$$= 4\,653 + 1\,256,31$$

$$= R5\,909,31$$
 ◀

4.2.3 Die maandelikse paalement

$$= \frac{5\,909,31}{36}$$

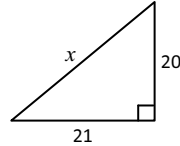
$$\approx R164,15 \quad \leftarrow \dots \text{afgerond tot die naaste sent}$$

5.1 $x^2 = 20^2 + 21^2 \quad \dots$ *Stelling van Pythagoras*

$$= 841$$

$$\therefore x = \sqrt{841}$$

$$= 29 \quad \leftarrow$$

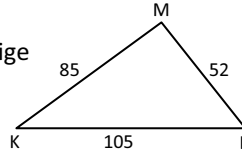


5.2 $105^2 = 11\,025$

& $85^2 + 52^2 = 9\,929$, wat minder is as 105^2

$\therefore \hat{M}$ is 'n stomphoek
 $\dots m^2 > k^2 + l^2$

$\therefore \triangle KLM$ is 'n ongelyksydige
 stomphoekige $\triangle \quad \leftarrow$

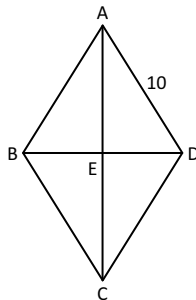


5.3 $ED = x \quad \dots$ *hoeklyne halveer mekaar*

& $AE = \frac{1}{2} AC$

$$= \frac{1}{2} \left(\frac{4}{3} \times 2x \right)$$

$$= \frac{4}{3}x$$



$\hat{AED} = 90^\circ \quad \dots$ *hoeklyne halveer reghoekig*

$\therefore ED^2 + AE^2 = AD^2 \quad \dots$ *Stelling van Pythagoras*

$$\therefore x^2 + \left(\frac{4}{3}x\right)^2 = 10^2$$

$$\therefore x^2 + \frac{16}{9}x^2 = 100$$

$$\therefore \frac{25}{9}x^2 = 100 \quad \dots 1 + \frac{16}{9} = \frac{9+16}{9} = \frac{25}{9}$$

$$\therefore \frac{9}{25} \times \frac{25}{9}x^2 = 100 \times \frac{9}{25}$$

$$\therefore x^2 = 36$$

$$\therefore x = 6 \quad \dots$$

x is positief slegs omdat dit 'n lengte is



d.w.s. Die lengte van ED = 6 eenhede $\leftarrow$

6.1.1 'n Vierhoek met beide pare teenoorstaande sye parallel en 'n paar aangrensende sye gelyk is 'n **ruit**. $\leftarrow$

6.1.2 'n Vierhoek met een paar teenoorstaande sye parallel is 'n **trapesium**. $\leftarrow$

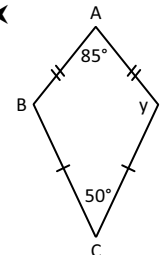
6.2.1 $AB = 5 \text{ cm} \quad \leftarrow \dots AB = AD$, aangrensende sye van 'n vlieër

6.2.2 $\hat{ABC} = y \quad \dots$ *deur simmetrie*

$$\therefore 2y + 85^\circ + 50^\circ = 360^\circ \quad \dots$$
 som van binne $\angle$ 'e van 'n vierhoek

$$\therefore 2y = 225^\circ$$

$$\therefore y = 112,5^\circ \quad \leftarrow$$



OF

Verbind AC.

$\hat{CAD} = \frac{1}{2}(85^\circ) \quad \& \quad \hat{ACD} = \frac{1}{2}(50^\circ) \quad \dots$ *die lang hoeklyn halveer die $\angle$ 'e van 'n vlieër*

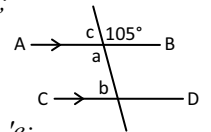
$$= 42\frac{1}{2}^\circ \quad \quad \quad = 25^\circ$$

$$\therefore \text{In } \triangle ACD: y = 180^\circ - \left(42\frac{1}{2}^\circ + 25^\circ\right)$$

$$= 112,5^\circ \quad \leftarrow$$

7.1 $a = 105^\circ \quad \leftarrow \dots$ *reghoekige hoeke*

$b = 180^\circ - a \quad \dots$ *ko-binne $\angle$ 'e;*
 $= 75^\circ \quad \leftarrow$ *$AB \parallel CD$*



$c = b \quad \dots$ *ooreenkomstige $\angle$ 'e;*
 $= 75^\circ \quad \leftarrow$ *$AB \parallel CD$*

OF: $c = 180^\circ - 105^\circ \quad \dots$ *$\angle$ 'e op 'n reguitlyn*
 $= 75^\circ$

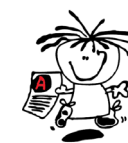
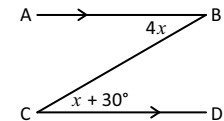
7.2 $4x = x + 30^\circ \quad \dots$ *verwisselende $\angle$ 'e; $AB \parallel CD$*

$$\therefore 4x - x = x + 30^\circ$$

$$\therefore 3x = 30^\circ$$

$$\therefore \frac{3x}{3} = \frac{30^\circ}{3}$$

$$\therefore x = 10^\circ \quad \leftarrow$$



die ANTWOORD
 reeks ... jou sleutel tot eksamen sukses

EKSAMENMEMO'S

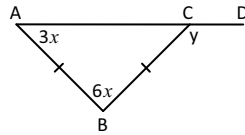
7.3 $\hat{A}CB = 3x$... $\angle$ 'e teenoorst. gelyke sye

$\therefore$ In $\triangle ACB$:

$$3x + 3x + 6x = 180^\circ \quad \dots \text{som van } \angle\text{'e in } \triangle$$

$$\therefore 12x = 180^\circ$$

$$\therefore x = 15^\circ \blacktriangleleft$$



& $y = 6x + 3x$... buite $\angle$ van $\triangle$

$$= 9x$$

$$= 9(15^\circ)$$

$$= 135^\circ \blacktriangleleft$$

= som van teenoorstaande binne $\angle$ 'e

(OF: $y = 180^\circ - 3x$... $\angle$ 'e op 'n reguitlyn)

$$= 180^\circ - 3(15^\circ)$$

$$= 135^\circ \blacktriangleleft$$



7.4 $\hat{D}_1 = 4x + 30^\circ$ (OF $\hat{C} = 2x - 10^\circ$)

... ooreenkomstige $\angle$ 'e; $DE \parallel BC$

$\therefore$ In $\triangle ADE$ (OF in $\triangle ABC$):

$$(4x + 30^\circ) + (2x - 10^\circ) + 64^\circ = 180^\circ \quad \dots \text{som van binne } \angle\text{'e van driehoek}$$

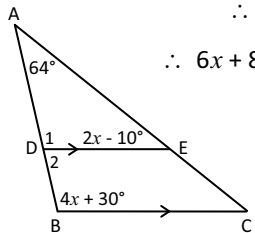
$$\therefore 6x + 84^\circ = 180^\circ$$

$$\therefore 6x + 84^\circ - 84^\circ = 180^\circ - 84^\circ$$

$$\therefore 6x = 96^\circ$$

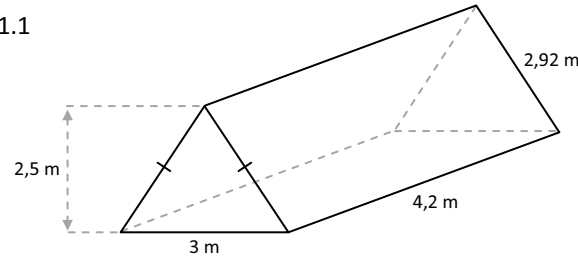
$$\therefore \frac{6x}{6} = \frac{96^\circ}{6}$$

$$\therefore x = 16^\circ \blacktriangleleft$$



Let Wel: Daar is dikwels meer as een manier!

8.1.1



Die totale buite-oppervlakte

$$= 2\Delta^e + 3 \text{ reghoeke}$$

$$= 2\left(\frac{1}{2} \times 3 \times 2,5\right) + (3 \times 4,2) + 2(4,2 \times 2,92)$$

$$= 7,5 + 12,6 + 24,528$$

$$= 44,628 \text{ m}^2$$

$$\approx 44,63 \text{ m}^2 \blacktriangleleft \dots$$

Let Wel:
instruksies is
om af te rond tot
2 desimale plekke



8.1.2 Die volume

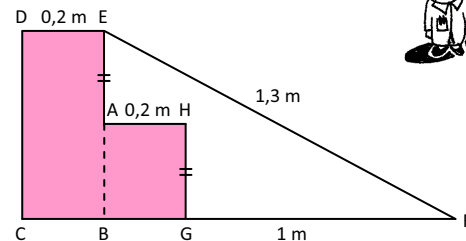
$$= \text{oppv. van die } \Delta^{\text{ige}} \text{ basis} \times \text{die hoogte van die prisma}$$

$$= \frac{1}{2}(3 \times 2,5) \times 4,2$$

$$= 15,75 \text{ m}^3 \blacktriangleleft$$



8.2



$$\text{In } \triangle EBF: EB^2 = EF^2 - BF^2$$

$$= 1,3^2 - (0,2 + 1)^2$$

$$= 0,25$$

$$\therefore EB = 0,5 \text{ m}$$

$$\& AB = \frac{1}{2}(0,5) \quad \dots EA = HG$$

$$= 0,25 \text{ m}$$

M5

$\therefore$ Die oppervlakte van die geskakeerde deel

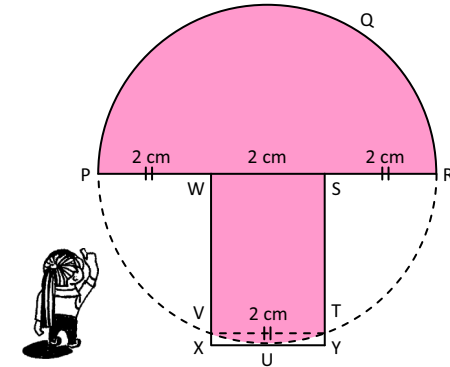
$$= \text{Oppv. van reghoek DCBE} + \text{oppv. van reghoek ABGH}$$

$$= 0,2 \times 0,5 + 0,2 \times 0,25$$

$$= 0,1 + 0,05$$

$$= 0,15 \text{ m}^2 \blacktriangleleft$$

8.3



Die oppervlakte van die geskakeerde deel

$$= \text{① Oppv. van 'n half-}\odot \text{ PQR} + \text{② Oppv. van WXYZ}$$

$$- \text{③ Opp van die nie-geskakeerde vorm VXUYT}$$

① Oppervlakte van half- $\odot$

$$= \frac{\pi(3)^2}{2} \quad \dots \text{die radius} = \frac{1}{2} \times 6 = 3 \text{ cm}$$

$$= 14,14 \text{ cm}^2$$

② Oppervlakte van WXYZ

$$= WX \times WS \quad \dots \text{lengte} \times \text{breedte}$$

$$= 3 \text{ cm} \times 2 \text{ cm} \quad \dots WX = \text{radius of } \odot = 3 \text{ cm}$$

$$= 6 \text{ cm}^2$$

③ Opp van die nie-geskakeerde vorm VXUYT

$$= \frac{1}{282} \text{ van } 14,14 \quad \dots \text{oppv. van half-}\odot \text{ in ①}$$

$$= 0,05 \text{ cm}^2$$

$\therefore$ die oppv. van die geskakeerde deel

$$= 14,14 + 6 - 0,05$$

$$= 20,09 \text{ cm}^2 \blacktriangleleft$$

**Die uitdaging met
dié vraag is om
dit goed te lees!**

