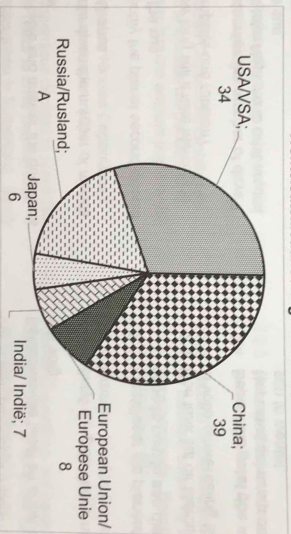


- 1.1 The graph below represents the number of orbital rocket launches that took place in the world in 2018. There were 114 launches that took place in 2018.

Orbit rocket launches for 2018/  
Wentelstalletienserings vir 2018



Study the graph above and answer the questions that follow.

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- 1.1 Die onderstaande grafiek verteenwoordig die aantal wentelstalletienserings wat in die wêreld plaasgevind het in 2018. Daar het 114 lanserings plaasgevind in 2018.

Bestudeer die bostaande grafiek en beantwoord die volgende vrae:

- 1.1.1 Identify the type of graph used above.
- 1.1.2 Calculate the number of launches that took place in Russia. (The value A.)
- 1.1.3 Which country had the most launches during 2018?
- 1.1.4 Calculate the percentage of launches that took place in China. Round your answer to the nearest whole number.
- 1.1.5 Write the number of rockets launched in Japan as a ratio to the number of rockets launched in the USA, in simplest form.
- 1.1.6 Explain the term probability.
- 1.1.7 Determine the probability that the European Union launched a rocket in 2018, as a fraction in simplest form.

1.2 The table below displays the planets of our Solar System.

1.2 Die tabel hieronder vertoon die planeete in ons Sonnestelsel.

Planets of our Solar System/  
Planeete van ons Sonnestelsel

Planet/Sun/ Planeet/Son	Diameter	Distance from Sun/ Afstand vanaf die Son	Number of Moons/ Getal Mane	1 Rotation/ 1 Rotasie*	Orbit/ Omwenteling
Mercury/ Mercurius	3 100 miles/myl	36 million miles/ miljoen myl	0	59 days/dae	88 days/dae
Venus	7 500 miles/myl	67 million miles/ miljoen myl	0	243 days/dae	225 days/dae
Earth/Arde	7 926 miles/myl	93 million miles/ miljoen myl	1	24 hours/ure	365 days/dae
Mars	4 218 miles/myl	142 million miles/ miljoen myl	2	24.4 hours/ure	697 days/dae
Jupiter	89 400 miles/myl	483 million miles/ miljoen myl	16	10 hours/ure	11.6 years/jare
Saturn/ Saturnus	75 000 miles/myl	886 million miles/ miljoen myl	20	10.4 hours/ure	29.46 years/jare
Uranus	32 300 miles/myl	1.8 billion miles/ biljoen myl	15	17 hours/ure	84 years/jare
Neptune/ Neptunus	32 300 miles/myl	2.8 billion miles/ biljoen myl	3	18-22 hours/ure	165 years/jare
Sun/Son	871 000 miles/myl				

\* hours, days and years are Earth time\* ure, dae en jare is Arde tyd

[Source: Galaxy.com]

[Bron: Galaxy.com]

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**Note:** Orbit – curved path around a star, planet or moon.

**Nota:** Omwenteling – 'n Gekromde roete om 'n ster, planeet of maan.

Study the table and answer the questions that follow.

Besluiteer die tabel en antwoord die vrae wat volg.

- 1.2.1 Write down the number of moons of Uranus. (2)
- 1.2.2 Identify the planet second closest to the sun. (2)
- 1.2.3 How long will it take Mercury to complete one rotation? (2)
- 1.2.4 Determine the number of days it will take Neptune to orbit around the sun. (2)
- 1.2.5 Arrange the diameters in ascending order. (2)
- 1.2.6 Convert the distance from the Sun to Neptune to kilometers if 1 mile = 1,60934 km. (2)
- 1.2.7 The radius of the sun is 695 510 km. Write the radius value in words. (2)
- 1.2.1 Write down the number of moons of Uranus. (2)
- 1.2.2 Identifiseer die planeet wat die tweede naaste aan die son is. (2)
- 1.2.3 Hoe lank sal dit Mercurius neem om 'n volle omwenteling te maak? (2)
- 1.2.4 Bepaal die getal dae wat dit Neptunus sal neem om om die son te wenkel. (2)
- 1.2.5 Rangskik die diameters in stygende orde. (2)
- 1.2.6 Herlei die afstand van die Son na Neptunus na kilometers indien 1 myl = 1,60934 km. (2)
- 1.2.7 Die radius van die Son is 695 510 km. Skryf die radiuswaarde in woorde. (2)

[31]

## Question 2

## Vraag 2

2.1

Different telescope models with recommended use and price in Dollars

(All average prices include 15% VAT!)

Verskillende teleskoop modelle met voorgestelde gebruik en prys in Dollars

(Alle gemiddelde pryse sluit 15% BTW in)

Telescope model/ Teleskoop model	Recommended use/ Voorgestelde gebruik	Average price/ Gemiddelde prys
Orion StarBlast 6i	Hands-on beginners/ Praktiese beginners	\$ 499.99
Levenhuk LabZMMTB3 Combo	Learning/ Leer	\$ 57.42
Celestron Firstscope	Kids with limited budget/ Kinders met beperkte begroting	\$ 48.95
Celestron V8-inch SCT XLT	Hobbyists/ Stokopdijers	\$ 1 739.00
Orion Sky Quests Intelliscope	Hands-on enthusiasts/ Praktiese entoesiaste	\$ 699.00
Astronomers without Borders SheSky 130	Gift/ Geskenk	\$ 199.99

[Source: Adapted from Space.com]

[Bron: Aangepas van Space.com]

Study the table above to answer the questions that follow.

Besluiteer die bostaande tabel om die vrae wat volg te beantwoord.

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- 2.1.1 How much will the Levenhuk LasZWTB3 Combo cost in \$?
- 2.1.2 Which telescope model will be the best to buy as a present?
- 2.1.3 Calculate the difference between the cheapest and most expensive telescope.
- 2.1.4 Mr Neil Armstrong purchases 3 Celestron Firstscope, 2 Orion StarBlast 6i and one Celestron VX8-inch SCT XLT telescope. Calculate the total cost of the telescopes.
- 2.1.5 If Mr Neil Armstrong received a discount of 12.5%, calculate the price he will pay for the telescopes in question 2.1.4.
- 2.1.6 Calculate the average price of the Celestron VX8-inch SCT XLT VAT excluded, in dollars. Round your answer to two decimal places.
- 2.2 Nicolas Copernicus is an employee of SAAO Sutherland. Study the salary slip below and answer the questions that follow.
- 2.2.1 Bepaal die koste van die Levenhuk LasZWTB3 Combo in \$.
- 2.2.2 Wat is teleskoop model sal die beste wies om as 'n geskenk te koop?
- 2.2.3 Bereken die verskil tussen die goedkoopste en die duurste teleskoop.
- 2.2.4 Mr Neil Armstrong koop 3 Celestron Firstscope, 2 Orion StarBlast 6i en een Celestron VX8-inch XCT CLT teleskoop. Berekende die totale koste van die teleskope.
- 2.2.5 Indien Mr Neil Armstrong 'n aftslag van 12,5% met die aankoop van die teleskope ontvang, bereken die bedrag wat hy vir die teleskope in vraag 2.1.4 betaal.
- 2.2.6 Berekende die gemiddelde bedrag verkuldig vir die Celestron VX8-inch SCT XLT, BTW uitgesluit, in dollar. Rond jou antwoord af tot twee desimale plekke.
- 2.2.7 Berekende die koste van die Orion Sky Quest IntelleScope in Rand indien  $1 \$ = R15,04$ .
- 2.2.8 Nicolas Copernicus is 'n werknemer van SAAO Sutherland. Bestudeer die onderstaande salarisstrook en beantwoord die volgende vrae.
- 2.2.9 SAAO is die Suid-Afrikaanse Astronomiese Sieneweg

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SOUTH AFRICAN ASTRONOMICAL OBSERVATORY		SAAO SUTHERLAND	
Personnel No/	1302	Name/	Nicolas Copernicus
Personnel Nr		Naam	
Bank	Bank of S.A./	Bank A/c No/	67 252
	Bank van S.A.	Bank Rak Nr	
Appointment date/	1900-04-01	ID no/	77021922120987
Aansluitingsdatum		ID nr	
Pension fund No/	147302219	Payment date/	25 Feb 19
Pensioenfonds Nr		Betalingsdatum	
Location/	SUTHERLAND	Days worked /	23 days/
Dorp		Dae gewerk /	23 dae
Department/	ASTRONOMY/	Designation/	ASTRONOMEER/
Departement	ASTRONOMIE	Beroep	STERREKUNDE
Earnings/	Amount in Rand/	Deductions/	Amount in Rand/
Verdiensite	Bedrag in Rand	Afsettings	Bedrag in Rand
Basic salary/	A	PAYE/	R14 710,00
Basiese salaris		LBS	
Housing allowance/	R7 532,00	Pension fund/	B
Wooningsubsidië		Pensioenfonds	
Travelling allowance/	R3 445,00	Medical aid/	R2 750,00
Reisubsidië		Mediese fonds	
Gross Earnings/	R60 751,00	Gross deductonals/	C
Bruto inkomste		Bruto aftrekkings	
NETT PAYNETTO INKOMSTE			39 517,95

- 2.2.1 Write down the amount that Nicolas Copernicus receives as travel allowance.
- 2.2.2 In which department does Nicolas Copernicus work?
- 2.2.3 Calculate the basic salary (A) of Nicolas Copernicus.
- 2.2.4 Nicolas Copernicus contributes 7.5% towards his pension fund. Calculate the amount payable (B).
- 2.2.5 Calculate Nicolas Copernicus's gross deductions (C).
- 2.2.6 Nicolas Copernicus decided to purchase a XUV895 Galax to drive between the different telescopes in Sutherland. Study the information below and answer the questions that follow.
- 2.2.7 Write down the amount that Nicolas Copernicus receives as travel allowance.
- 2.2.8 In watter departement werk Nicolas Copernicus?
- 2.2.9 Berekende die basiese salaris (A) van Nicolas Copernicus.
- 2.2.10 Nicolas Copernicus dra 7,5% van sy basiese salaris by tot sy pensioenfonds. Berekende die bedrag betaalbaar (B).
- 2.2.11 Berekende Nicolas Copernicus se bruto aftrekkings (C).
- 2.3 Nicolas Copernicus het besluit om 'n XUV895 Galax te koop om tussen die verskillende teleskope te ry. Bestudeer die inligting hieronder en beantwoord die vrae wat volg.

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- Deposit – 25%/  
 Deposito – 25%/  
 Interest – 12.5%/  
 Rente – 12.5%

Duration – 60 months/  
 Tydperk – 60 maande

Monthly instalment = R3 402.02

Maandelikse paaiement = R3 402.02

2.3.1 Write down the cash price of the XUV885 Gator.

2.3.2 Calculate the deposit payable.

2.3.3 Calculate the amount that Nicolas will loan for the XUV885 Gator.

2.3.4 If the monthly payment is R3 402.02, calculate the total amount Nicolas will pay during the loan duration.

2.3.5 Determine the amount that Nicolas will spend on interest.

2.3.6 Calculate the total amount that Nicolas will spend to purchase the XUV885 Gator.

2.4 The table below displays the tax table from the SARS tax guide. The period is from 1 March 2019 to 29 February 2020. Study the table and answer the questions that follow.

**Income Tax: Individuals and Trusts/  
 Inkomstbelasting: Individue en Trusts**

Tax Bracket/ Belasting- kategorie	Taxable Income (in Rand)/ Belastbare Inkomste (in Rand)	Rate of Tax (in Rand)/ Belastingkoers (in Rand)
1	0 – 195 850	18% of taxable income/van belastbare inkomste
2	195 851 – 305 850	35 253 + 26% of taxable income above/van belastbare inkomste bo 195 850
3	305 851 – 423 300	63 853 + 31% of taxable income above/van belastbare inkomste bo 305 850
4	423 301 – 555 600	100 263 + 36% of taxable income above/van belastbare inkomste bo 423 300
5	555 601 – 708 310	147 891 + 39% of taxable income above/van belastbare inkomste bo 555 600
6	708 311 – 1 500 000	207 446 + 41% of taxable income above/van belastbare inkomste bo 708 310
7	1 500 001 and above/van toer	532 041 + 45% of taxable income above/van belastbare inkomste bo 1 500 000

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**E1**



Cash price – R167 484/  
 Kontantbedrag – R167 484

2.3.1 Skryf die kontantbedrag reer van die XUV885 Gator.

2.3.2 Bereken die deposito betaalbaar.

2.3.3 Bereken die bedrag wat Nicolas sal len vir die XUV885 Gator.

2.3.4 Indien die maandelikse paaiement R3 402.02 is, bereken die totale bedrag wat Nicolas sal betaal gedurende die lenings tydperk.

2.3.5 Bereken die bedrag wat Nicolas op rente sal spandeer.

2.3.6 Bereken die totale bedrag wat Nicolas gaan spandeer om die XUV885 Gator aan te koop.

2.4 Die tabel hieronder vertoon die belasting-tabel uit die SARS belastinggids. Die tydperk is vanaf 1 Maart 2019 tot 29 Februarie 2020. Bestudeer die tabel en beantwoord die vrae wat volg.

Type of Rebate/ Tipe korting	Amount/ Kortingsbedrag	Age/ Ouderdom	Tax Threshold/ Belastingdrempel
Primary/ Primêre	R14 220	Below age 65/ Onder 65 jaar	R79 000
Secondary/ Sekondêre	R7 794	Age 65 to below 75/ Van 65 jaar tot onder 75 jaar	R122 300
Tertiary/ Tertiêre	R2 601	Age 75 and older/ Van R75 jaar en ouer	R136 750

[Source: Adapted from SARS pocket tax guide 2019] [Bron: Aangepas van SARS belasting salydops 2019]

2.4.1 What does PAYE stand for?

2.4.2 Write down the tax threshold for a person 75 years or older.

2.4.3 Determine the rebate amount of a 67 year old employee.

2.4.4 In which tax bracket will an employee fall who earns an annual salary of R145 860?

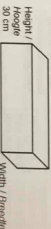
2.4.5 Calculate the annual income tax of a 23 year old employee with a monthly taxable income of R34 160.

[56]

**Question 3**

3.1 A cardboard box is used to pack a telescope.

Study the diagram below and answer the questions that follow.



Length / Lengte  
1 500 mm

Width / Breedte  
28 cm

3.1.1 Convert the length of the box to cm.

(2)



**Vraag 3**

3.1 'n Kartonhouer word gebruik om 'n teleskoop te verpak.

Bestudeer die onderstaande diagram en beantwoord die volgende vrae.

2.4.5 Bereken die jaarlikse inkomste-belasting van 'n 23-jarige werknemer met 'n maandelikse inkomste van R34 160.

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**Memo: 49: 50**

3.1.1 Herlei die lengte van die houer na cm.

**E1**