

Unit Title: Lifeskills Mathematics Nat 5

Unit Code: H225 75

Remember to show all of your working and use units where appropriate.

ANSWERS

Pre-assessment

All Departments

ANSWERS

Student Name: _____ **Course/Class** _____

I understand the conditions of this pre-assessment and the policy on plagiarism.
In signing, I declare that the evidence presented throughout the unit is my own work,
acknowledging all sources of reference and providing citation as appropriate.

Student Signature: _____ **Date:** _____

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Conditions of Pre-Assessment

Classroom (Open Book)	☐	Practical	☐
Classroom (Closed Book)	☒	Written	☒
Home-Based (Open Book)	☐	On-line	☐
Other	☐	Supervised	☒
Duration of Pre-Assessment:		Approx. 1.5 hours	
Resources Required:		Calculator permitted	

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Question 1

Linda bought an antique vase for Euros 24,780

It appreciated in value by 2.3% for each of the next four years.

How much is Linda's antique vase now worth?

Give your answer to two significant figures.

ANSWER:

Purchase price is Euros $24,780 \times 1.023^4$

$$24780 \times 1.023^4 = 27139.62$$

Rounded off to 2 significant figures Euros 27,000

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Question 2

A cleaning fluid manufacturer sells its product in 900 ml bottles.
Each empty bottle weighs 80 grams.

To transport the full bottles, they are packaged in trays of 380 bottles.

A local cleaning company orders 14 trays of the cleaning fluid. The manufacturer has a delivery vehicle that can accommodate a maximum load of 7.5 tonnes.

1 litre of cleaning fluid weighs 1 kilogram.

Can the order be delivered in one van load?
Use your calculations to justify your answer.

ANSWER:

900 ml bottles, each empty one is 80 grams.

Fluid contents being 1 litre = 1 kilogram.

So, each bottle has fluid that is 0.9 litres = 0.9 kilograms (900 grams)

Therefore, each bottle is 900 grams + 80 grams = 980 grams

In Kilograms, this would be 0.98 kilograms per bottle

580 bottles per tray, would be 580×0.98 kilograms = 568.4 kilograms per tray

14 trays $\times$ 568.4 kilograms per tray = 7,957.6 kilograms

1 Tonne = 1,000 kilograms

Therefore, total weight of consignment is 7.96 Tonnes

Not able to transport in one trip with 7.5 Tonne vehicle

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Question 3

Bhoomi enjoyed a holiday with her parents in Mumbai, India.

She had 920 Indian Rupees for spending money.

Having spent an average of 78 Indian Rupees on each of the 8 days she was in Mumbai.

Upon returning home to Bordeaux in France, she changed her Indian Rupees to Euros.

Euros 1 = 89.25 Indian Rupees

How much, in Euros, will Bhoomi get for her remaining Indian Rupees?

Give your answer in currency to 2 decimal places.

ANSWER:

$78 \text{ Indian Rupees} \times 8 \text{ days} = 624 \text{ Indian Rupees spent}$

$920 - 624 = 296 \text{ Indian Rupees balance left over}$

$296 \div \text{Rate of exchange } 89.25 = 3.316$

Euros 3.32 rounded off

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Question 4a

Shigeko leaves her hotel in Takahama, Japan at 15:32 local time and arrives at home in Scotland at 10.13 pm

The time in Japan is 8 hours ahead of time in Scotland.

How long did the journey take door to door?

ANSWER:

15:32 Japan time – 8 hours = 07:32 hrs time in Scotland

Completion time of journey is 22:13 hrs time in Scotland

07:32 until 22:13 hrs is the journey time

28 mins between 07:32 to nearest hour of 08:00 (bank the 28 mins just now)

$22 - 8 = 14$ hours plus the minutes of $28 + 13 = 41$ mins

Journey time is 14 hours 41 mins door to door

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Question 4b:

Abeba and family decide to book luxury cinema season tickets for a new cinema. There are three types of seating available: Comfort, Comfort Plus and Snooze Super.

Prices are shown within the table below.

Comfort		Comfort Plus		Snooze Super
Daily Use	Anytime	Daily Use	Anytime	Anytime
Euros 172.98	Euros 182.95	Euros 192.98	Euros 215.02	Euros 278

Children up to 16 pay 80% of the full price.

Additional Luxuries (additional cost for all types of season tickets)	
Unlimited cold drinks	Euros 33.59
Unlimited hot dogs	Euros 93.12

Adults over 18 pay 75% more for Additional Luxuries.

A £3.50 fee will be added to all credit card transactions.

Abebe and her husband, plus their three children aged 5, 13, and 17, wish to book.

- Deciding upon the Comfort Plus Anytime season tickets
- All within the group with all additional luxuries
- Payment made by credit card
- Budget of Euros 1,500

Have they budgeted enough to cover all costs?

ANSWER:

Euros 215.02 x 3 persons over 17 years of age = 645.06

Price for child under 16 being Euros 215.02 x 0.8 = 176.02 then x 2 = 352.04

Additional Luxuries (33.59 + 93.12 = 126.71) x 3 under 18's = 380.13

Additional Luxuries over 18's is (Euros 126.71 x 1.75 = 221.74) x 2 = 443.48

Plus, credit card surcharge for one payment = 3.50

Total: Euros 1,824.21 therefore over budget by 324.21

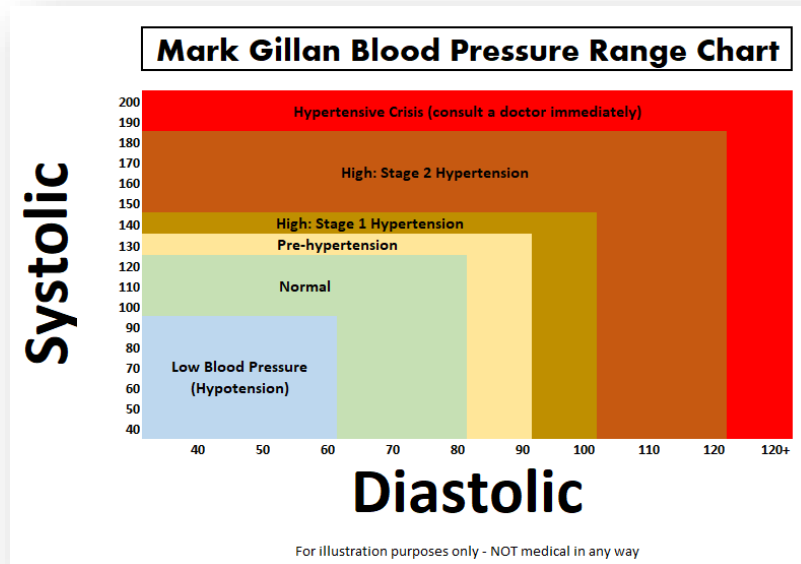
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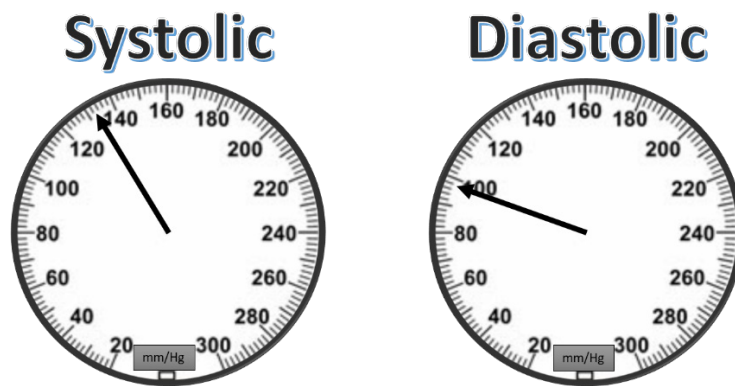
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Question 5:

Mark's blood pressure chart shows the ranges of blood pressure zones.



Li-Hua has had her blood pressure taken using a sphygmomanometer. The results are shown on the dials below.



Explain what this tells Li-Hua about her blood pressure.

ANSWER:

132 mm/Hg over 98 mm/Hg means the systolic is within the pre-hypertension range and the diastolic is within the high stage 1 hypertension zone. The diastolic is worse than the systolic.

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Question 6:

A local community college library has nonfiction books occupy $\frac{1}{5}$ of the library shelves and $\frac{2}{9}$ occupied by general study. The balance of the books is leisure science fiction.

What fraction of the books is leisure science fiction?

ANSWER:

Multiplying fractions of denominators not the same as each other, has us using two steps...

Step 1: calculate the numerator by multiplying top with opposite bottom for each. Being, $1 \times 9 = 9$ and $2 \times 5 = 10$ then add those numbers together $9 + 10 = 19$

Step 2: calculate the denominator by adding the current ones together. Being, $5 \times 9 = 45$

Thus, the fraction of the two together is $\frac{19}{45}$ meaning fraction from 1 whole.

The fraction of books being leisure science fiction is: $\frac{26}{45}$

This is the smallest form for this fraction.

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Question 7

Comedy act Lollie & Haddie performed at the Megadome Arena. There were three levels of seats available.

Stage Centre (A) being the most expensive and best seats, Stage Side (B) middle priced, and Cloud High (C) being the cheapest.

The cheapest seats at the concert were Euros 22.50

The ratio of ticket prices was:

$$A:B:C = 5:3:1$$

Part One of question:

What is the price of each type of seat?

ANSWER:

If the cheapest seat was **Euros 22.50** for Type C

Then 3×12.50 for B = **Euros 37.50**

And 5×12.50 for A = **Euros 112.50**

Part Two of question:

It was a sell-out crowd of 7,000 tickets.

The ratio of the number of each type of seat was:

$$A:B:C = 3:4:8$$

Calculate the total amount taken in ticket sales to the nearest whole number.

ANSWER:

Type A seats would be $3/15$ ths a.k.a. $1/5$ th of 7,000 = 1400

Type B seats would be $4/15$ ths, so $7,000 \times 0.267 = 1869$

Type C seats would be $8/15$ ths, so $7,000 \times 0.533 = 3731$

Check by totalling up number of seats.

Ticket sales at prices already calculated:

Type A with 1400 seats x Euros 112.50 = 157,500

Type B with 1869 seats x Euros 37.50 = 70,087.50

Type C with 3731 seats x Euros 22.50 = 83,947.50

TOTAL them up for the GRAND TOTAL of AMOUNT TAKEN: **Euros 311,535**

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Question 8

A large supplier of antique vinyl records orders specialist vinyl records in boxes of 8

The probability of scratched or broken old records is 0.017

In a delivery of 800 boxes, 13 boxes contain at least one broken or scratched vinyl

Is this more or less than expected?

Use your workings to explain your answer.

ANSWER:

$800 \text{ boxes} \times 0.017 = 13.6$ rounded off to 14 boxes out of 800

Less than expected, would **expect 14 boxes** to contain at least one broken record

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Question 9

A group of 15 volunteers were asked to read pages of a 50-page book in 3 hours as part of a fun experiment.

A note is made as to the number of pages read in the time provided, whilst distractions are made.

Each volunteer is then hypnotised after reading that book. The hypnosis makes suggestions as to reading faster and concentration methods to ignore the distractions.

The volunteers are asked to read another book, again containing 50 pages and under the same circumstances. A note is made as to the number of pages read this time round.

The results are shown below.

Before Hypnosis	After Hypnosis
5 4 4 3 2 2 1	3
7 5 1 2	2 8
8 7 5 4 3	1 5 5
1 4	2 3 3 4 9
1 5	4 5 7 8
n=15	n=15

Key: 4|2 = 42 out of 50 pages

(a) What was the highest number of pages read?

ANSWER: 58 pages

(b) Calculate the mean number of pages before and after, declaring if the hypnosis might have assisted within the experiment.

ANSWER: Before hypnosis $390 \div 15 = 26$ and After hypnosis $609 \div 15 = 40.6$

The experiment shows a large **increase** in the **number of pages** read.

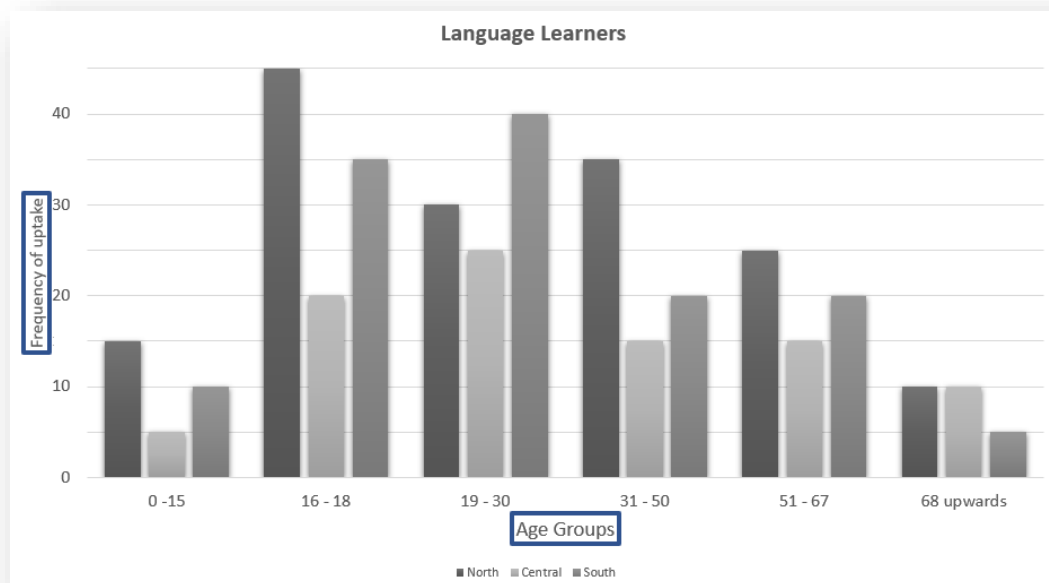
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Question 10

The column chart shows the frequency of uptake of languages for age groups within three regions of North, Central and South.



(a) Which region had the highest frequency of uptake for the 16-18 age group and what was the frequency uptake?

ANSWER: North, with a frequency uptake of 45

(b) Generally, across all age groups, which region has the higher frequencies of uptake? Explain your response.

ANSWER: North, out of six age groups, this region is not the best only in 2 age groups, with one of those age groups being second highest and the other joint second in respect to frequency of uptake.

(c) Generally, across all age groups, which region tends to have the lesser frequencies of uptake? Explain your response.

ANSWER: Central region is the lowest frequency for all bar one age group, even then it is joint second out of three regions.

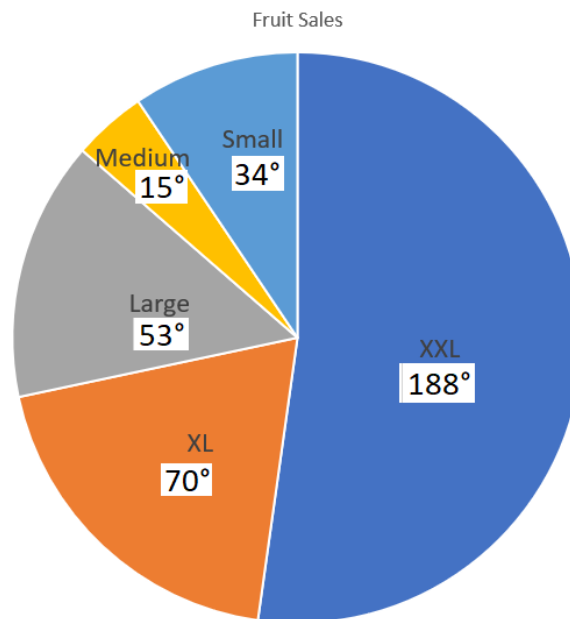
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Question 11

The pie chart shows the production amounts of t-shirt sizes of a small manufacturer for one week.



There was a total of 486 pieces of XL produced that week.

Calculate the number of XXL for the same week.

ANSWER:

XL accounts for 70° of the total 360° with 486 pieces produced

XXL accounts for 188°

$$486 \text{ pieces} \div 70 = 6.942857$$

So, proportionately, each degree (angle) of the pie is 6.942857 pieces.

Therefore, the angle for XXL to calculate the answer is $188 \times 6.942857 = 1305.257$

The answer is XXL is **1305** (rounded off to whole number)

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Question 12

A supplier of crystal glasses orders fine crystal goblets in boxes of 6

The probability of scratched or broken old records is 0.028

In a delivery of 900 boxes, 28 boxes contain at least one broken crystal goblet

Is this more or less than expected?

Use your workings to explain your answer.

ANSWER:

$900 \text{ boxes} \times 0.028 = 25.2$ rounded off to 25 boxes out of 900

More than expected, would **expect 25 boxes** to contain at least one broken goblet

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Question 13

Pia bought a rare coin for Euros 1575

It appreciated in value by 13.5% for each of the next three years.

How much is Pia's rare coin now worth?

Give your answer to two significant figures.

ANSWER:

Purchase price is Euros 1575×1.135^3

$$1575 \times 1.135^3 = 2302.86$$

Rounded off to 2 significant figures Euros 2300

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Question 14

Homer leaves his mother's house in San Francisco, USA at 02:42 local time and arrives at his friend's house in Scotland at 11.09 pm

The time in San Francisco is 8 hours behind the time in Scotland.

How long did the journey take door to door?

ANSWER:

Using the 24 hour clock in calculations

02:42 San Francisco time + 8 hours = 10:42 hrs time in Scotland

Completion time of journey is 23:09 hrs time in Scotland

10:42 hrs until 23:09 hrs is the journey time

18 mins between 10:42 to nearest hour of 11:00 (bank the 18 mins just now)

$23 - 11 = 12$ hours plus the minutes of $18 + 9 = 27$ mins

Journey time is 12 hours 27 mins door to door

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Question 15

A hand sanitiser manufacturer sells its product in 850 ml bottles.
Each empty bottle weighs 50 grams.

To transport the full bottles, they are packaged in trays of 700 bottles.

A local germ control company orders 32 trays of the hand sanitiser.
The manufacturer has a delivery vehicle that can accommodate a maximum load of 23 tonnes.

1 litre of cleaning fluid weighs 1 kilogram.

Can the order be delivered in one van load?
Use your calculations to justify your answer.

ANSWER:

850 ml bottles, each empty one is 50 grams.

Fluid contents being 1 litre = 1 kilogram.

So, each bottle has fluid that is 0.85 litres = 0.85 kilograms (850 grams)

Therefore, each bottle is 850 grams + 50 grams = 900 grams

In Kilograms, this would be 0.9 kilograms per bottle

700 bottles per tray, would be 700×0.9 kilograms = 630 kilograms per tray

32 trays $\times$ 630 kilograms per tray = 20,160 kilograms

1 Tonne = 1,000 kilograms

Therefore, total weight of consignment is **20.16 Tonnes**

It is okay to transport in one trip with one 23 Tonne vehicle

THIS IS THE END OF THE PRE-ASSESSMENT