

STUDY SKILLS

LANTITE: Numbers & algebra

PERCENTAGE QUESTIONS

QUESTION 1A

Lee paid \$29.95 for a shirt. It was on sale at a 50% discount.

Which of the following is the best estimate for the original price of the shirt?

- A. \$15
- B. \$30
- C. \$45
- D. \$60

QUESTION 1B

Luke paid \$89.95 for some pants. They were on sale at a 25% discount.

Which of the following is the best estimate for the original price of the pants?

- A. \$22.50
- B. \$67.50
- C. \$120
- D. \$360

QUESTION 1C

Neil paid \$59.95 for some pants. They were on sale at a 25% discount.

Which of the following is the best estimate for the original price of the pants?

- A. \$15
- B. \$80
- C. \$120
- D. \$240

QUESTION 2A

A test has a pass mark of 70%. If there are 35 questions, what is the minimum number of correct answers necessary to pass?

QUESTION 2B

A test has a pass mark of 75%. If there are 53 questions, what is the minimum number of correct answers necessary to pass?

QUESTION 2C

A test has a pass mark of 70%. If there are 113 questions, what is the minimum number of correct answers necessary to pass?

QUESTION 2D

A test has a pass mark of 65%. If there are 42 questions, what is the minimum number of correct answers necessary to pass?

QUESTION 2E

A test has a pass mark of 75%. If there are 42 questions, what is the minimum number of correct answers needed to pass?

QUESTION 3

A student scored 30 out of 50 in one test, and 16 out of 25 in another. What is the average percentage for the two tests, assuming they are weighted equally?

QUESTION 4

In a year group, 7 out of every 10 students passed a key test. What percentage of the pupils failed to pass the test?

QUESTION 5A

A price reduction of a particular item means that the number of sales is expected to increase by 30%. Given that the number of sales was originally 20 000, how many extra sales can be expected?

QUESTION 5B

5% of half-day sessions in a primary school were missed due to absence. If there were 380 half-day sessions, how many were missed due to absence?

QUESTION 5C

If 30% of a survey sample of 680 people have the blood type A+, then how many people in the sample have the blood type A+?

QUESTION 5D

An asset originally worth \$52 300 is determined to have depreciated by 23%. How much has the value of the asset decreased by?

QUESTION 5E

If I know that 30% of a sample of 550 students are studying a particular degree, how many students does this equate to?

QUESTION 6A

If the pre-GST price of an item is \$480, what will be the new price once 10% GST is added?

QUESTION 6B

A patient who originally weighed 50kg has increased in weight by 15%. What is the new weight of the patient?

QUESTION 6C

The number of sales of a particular item are expected to decrease by 33%. Given that the number of sales was originally 20 000, how many sales can now be expected?

QUESTION 6D

A child who originally measured 110cm has now increased in height by 12%. What is the new height of the child, rounded to the nearest cm?

QUESTION 7A

If a company sells an item for \$200, of which \$105 is profit, what percentage of the sale is profit?

QUESTION 7B

A telephone bill totals \$80 for a given period, and the charge for the service and equipment is \$20 of this total. What percentage of the bill is in payment of service and equipment?

QUESTION 7C

There are 1500 students studying Humanities, and of those 180 are studying Education. What percentage of Humanities students are studying Education?

QUESTION 7D

A school excursion costs \$70, and the deposit is \$14. What percentage of the cost is the deposit?

QUESTION 7E

If a company sells an item for \$500, of which \$300 is profit, what percentage of the sale is profit?

QUESTION 7F

If 300 out of a sample of 490 people drive their car to work, then what percentage of the sample does this equate to, rounded to two decimal places?

QUESTION 7G

If a student scored 28 out of 40 on an assignment, what is their mark as a percentage?

QUESTION 7H

A telephone bill for a given period is \$120, of which \$45 is for the service and equipment. What percentage of the bill is in payment of service and equipment?

QUESTION 8A

If my heart rate before exercise is 70 beats per minute, and my heart rate after is 84 beats per minute, then what is the percentage change from my original heart rate to my new heart rate?

QUESTION 8B

The number of customers frequenting a particular business in the previous financial year was 5300, while this financial year it was 4500. How much of a percentage increase or decrease is this (rounded to two decimal places)?

QUESTION 9A

320 students sat a test and 35% achieved grade C or below. How many achieved grade B or above?

QUESTION 9B

A school has a maximum capacity of 950 students. Given the current occupancy rate is 94% of this maximum, how many more students could enrol in the school?

QUESTION 9C

Sales reps at a company are paid 15% of the sale price of an item in commission. If a rep sells an item for \$200, how much will the company receive for the item after the commission has been paid?

QUESTION 10

The highest mark in a test was 46 out of 50, and the lowest was 25 out of 50. What is the difference between the highest and lowest marks in percentage points?

ALGEBRA QUESTIONS

QUESTION 11A

Sarah earns \$1100 each week, and saves a quarter of this. Which equation could be used to calculate how much Sarah saves?

- A. $\text{savings} = 1100 \div 0.25 \times \text{number of weeks}$
- B. $\text{savings} = 1100 \times 4 \times \text{number of weeks}$
- C. $\text{savings} = 1100 \div 4 \times \text{number of weeks}$
- D. $\text{savings} = 1100 \times 4 \div \text{number of weeks}$

QUESTION 11B

Lucy earns \$800 a week, and saves half of what she earns. Which of these equations could be used to calculate how much money she saves?

- A. $\text{Savings} = 800 \div (0.5 \times \text{number of weeks})$
- B. $\text{Savings} = 800 - (0.5 \times \text{number of weeks})$
- C. $\text{Savings} = 800 \times 0.5 \times \text{number of weeks}$
- D. $\text{Savings} = 800 \times 2 \times \text{number of weeks}$

QUESTION 11C

Mike earns \$600 a week, and saves a quarter of what he earns. Which of these equations could be used to calculate how much money he saves?

- A. $\text{Savings} = 600 - (0.25 \times \text{number of weeks})$
- B. $\text{Savings} = 600 \times 4 \times \text{number of weeks}$
- C. $\text{Savings} = 600 \div 0.25 \times \text{number of weeks}$
- D. $\text{Savings} = 600 \div 4 \times \text{number of weeks}$

QUESTION 11D

David earns \$700 a week, and saves a third of what he earns. Which of these equations could be used to calculate how much money he saves?

- A. $\text{Savings} = 700 \times 3 \times \text{number of weeks}$
- B. $\text{Savings} = 700 \div 3 \times \text{number of weeks}$
- C. $\text{Savings} = 700 - (0.33 \times \text{number of weeks})$
- D. $\text{Savings} = 700 \div 0.33 \times \text{number of weeks}$

QUESTION 12

A number is multiplied by 20 and 45 added on. If the answer is 325, what is the number?

QUESTION 13

Sarah wanted to multiply by 32, but divided by 32 by mistake. Her answer was 6. What should her answer have been?

- A. 32
- B. 192
- C. 1024
- D. 6144

QUESTION 14A

If $360 \div 90 = \Delta \div 30$, then what must Δ equal?

- A. 9
- B. 120
- C. 4
- D. 7.5

QUESTION 14B

If $450 \div \Delta = 63 \div 7$, then what must Δ equal?

- A. 9
- B. 7
- C. 50
- D. 63

QUESTION 15

If $63 \times 22 + 63 \times 28 = 63 \times (70 - \Delta)$, then what must Δ equal?

- A. 20
- B. 30
- C. 40
- D. 50

QUESTION 16

If $70 - (52 - 26) = (70 - \Delta) - 26$, then what must Δ equal?

- A. 52
- B. 2
- C. 6
- D. 0

NUMBER QUESTIONS**QUESTION 17A**

The number of kilometres a car has travelled is shown.

93 785

The car has to be serviced when it has travelled 100 000 km.

How many more kilometres can the car be driven before it needs to be serviced?

- A. 6 215
- B. 6 325
- C. 7 215
- D. 7 325

QUESTION 17B

The number of kilometres a car has travelled is shown.

48 236

The car has to be serviced when it has travelled 80 000 km.

How many more kilometres can the car be driven before it needs to be serviced?

QUESTION 18A

A student advisor is creating a timetable for consulting with students. She plans to see each student for 20 minutes, and to see students in 3 hour blocks of consecutive consultations. If the advisor needs to see 44 students, what is the minimum number of 3 hour sessions she will need to schedule?

QUESTION 18B

A student advisor is creating a timetable for consulting with students. She plans to see each student for 15 minutes, and to see students in 2.5 hour blocks of consecutive consultations. If the advisor needs to see 62 students, what is the minimum number of 2.5 hour sessions she will need to schedule?

QUESTION 19A

This nutrition information is on the packet of a loaf of bread:

NUTRITION INFORMATION			
Serving size: 1 slice, 44g Servings per pack: 16			
Typical values	Average quantity (per 100 g)	Average quantity (per serve)	Daily intake* (per serve)
Energy	985 kJ	433 kJ	5%
Fat total	1.5 g	0.7 g	
-Saturates	0.3 g	0.1 g	1%
Carbohydrates	45.5 g	20.0 g	
-Sugars	3.8 g	1.7 g	2%
Fibre	2.8 g	1.2 g	
Protein	7.7 g	3.4 g	
Salt	1.0 g	0.4 g	7%
* Percentage daily intakes are based on an average adult diet of 8400 kJ (or 2000 kcal).			

If an average adult ate a quarter of the packet of bread, what percentage of their daily salt intake have they consumed?

QUESTION 19B

This nutrition information is on the packet of a loaf of bread:

NUTRITION INFORMATION			
Serving size: 1 slice, 44g Servings per pack: 16			
Typical values	Average quantity (per 100 g)	Average quantity (per serve)	Daily intake* (per serve)
Energy	985 kJ	433 kJ	5%
Fat total	1.5 g	0.7 g	
-Saturates	0.3 g	0.1 g	1%
Carbohydrates	45.5 g	20.0 g	
-Sugars	3.8 g	1.7 g	2%
Fibre	2.8 g	1.2 g	
Protein	7.7 g	3.4 g	
Salt	1.0 g	0.4 g	7%
* Percentage daily intakes are based on an average adult diet of 8400 kJ (or 2000 kcal).			

If an average adult ate half of the packet of bread, what percentage of their daily sugar intake have they consumed?

QUESTION 19C

This nutrition information is on the packet of a loaf of bread:

NUTRITION INFORMATION			
Serving size: 1 slice, 44g Servings per pack: 16			
Typical values	Average quantity (per 100 g)	Average quantity (per serve)	Daily intake* (per serve)
Energy	985 kJ	433 kJ	5%
Fat total	1.5 g	0.7 g	
-Saturates	0.3 g	0.1 g	1%
Carbohydrates	45.5 g	20.0 g	
-Sugars	3.8 g	1.7 g	2%
Fibre	2.8 g	1.2 g	
Protein	7.7 g	3.4 g	
Salt	1.0 g	0.4 g	7%
* Percentage daily intakes are based on an average adult diet of 8400 kJ (or 2000 kcal).			

If an average adult ate an eighth of the packet of bread, how many grams of fibre have they consumed?

QUESTION 20

The daily charges of AUSSIE RENT-A-CAR are shown:

	1–6 DAYS	7 OR MORE DAYS
Cost per day	\$44	\$38

Mia hires a car for 6 days.

Jan hires a car for 7 days.

How much more does Jan pay compared to Mia?

- A. \$2
- B. \$6
- C. \$38
- D. \$44

QUESTION 21A

Max paid \$42 for a taxi journey lasting 23 minutes. The charge for the taxi included a call out fee of \$5, and that the rest was calculated based on the duration of the journey. Determine the hourly rate of the taxi (excluding the call out fee), to the nearest cent.

QUESTION 21B

Diana paid \$53 for a taxi journey lasting 30 minutes. The charge for the taxi included a call out fee of \$8, and that the rest was calculated based on the duration of the journey. Determine the hourly rate of the taxi (excluding the call out fee).

QUESTION 21C

Sarah paid \$38.5 for a taxi journey lasting 27 minutes. The charge for the taxi included a call out fee of \$7, and that the rest was calculated based on the duration of the journey. Determine the hourly rate of the taxi (excluding the call out fee).

QUESTION 21D

Mark paid \$45.50 for a taxi ride lasting 72 minutes. The charge for the taxi included a call out fee of \$5, and the rest was calculated based on the duration of the journey. Determine the hourly rate of the taxi (excluding the call out fee).

QUESTION 21E

Luke paid \$23.50 for a taxi ride lasting 19 minutes. The charge for the taxi included a call out fee of \$6, and the rest was calculated based on the duration of the journey. Determine the hourly rate of the taxi (excluding the call out fee), rounded to two decimal places.

Solutions

1A: D
1B: C
1C: B
2A: 25
2B: 40
2C: 80
2D: 28
2E: 32
3: 62%
4: 30%
5A: 6000 extra sales
5B: 19
5C: 204
5D: \$12 029
5E: 165 students
6A: \$528
6B: 57.5kg
6C: 13 400
6D: 123cm
7A: 52.5%
7B: 25%
7C: 12%
7D: 20%
7E: 60%
7F: 61.22%
7G: 70%
7H: 37.5%
8A: 20% increase
8B: 15.09% decrease
9A: 208
9B: 57
9C: \$170
10: 42%
11A: C
11B: C
11C: D
11D: B
12: 14
13: D
14A: B
14B: C
15: A
16: D
17A: A
17B: 31 764
18A: 5
18B: 7
19A: 28%
19B: 16%
19C: 2.4g

20: A
21A: \$96.52
21B: \$90
21C: \$70
21D: \$33.75
21E: \$55.26