

VCE VM Numeracy Unit 1

Chapter 8 — GAT Section A numeracy practice

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Chapter 8 GAT Section A numeracy practice — 8A GAT Section A numeracy practice 1

The General Achievement Test (GAT) is run by the VCAA. It has two sections, and students in the VCE Vocational Major sit **Section A** only. Section A contains two writing tasks and 100 multiple-choice questions: 50 numeracy questions and 50 reading and writing questions. This practice set gives you 50 multiple-choice numeracy questions in the GAT Section A shape. Every question uses only the maths taught in this book, at Unit 1 depth. Check your letters against the answers and fully-worked solutions at the back of the book.

50 multiple-choice questions, 1 mark each — 50 marks in total. Suggested time: about 60 minutes, which is around one minute per question.

Materials: pen, paper and a basic scientific calculator. No other technology is needed.

About the data in this practice set. The names, prices, times, tables and charts here are **made up** (not real): pretend people, pretend businesses and pretend numbers, built for this book so you can practise the maths. Nothing here is real data about a real business, person or place.

Choose the one best answer for each question and write its letter on the question paper.

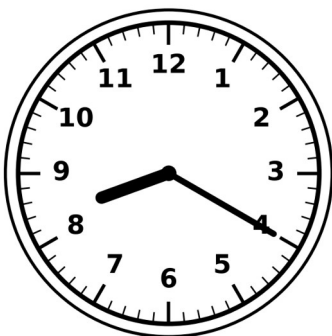
Question 1

Which of these is the best estimate for the height of a doorway?

- A. 20 cm
- B. 2 m
- C. 20 m
- D. 2 cm

Question 2

The clock face shows the time Micah takes his morning medicine.



An analogue clock face with twelve hour numbers; the short hour hand sits a little past the 8 and the long minute hand points at the 4

What time does the clock show?

- A. 8:20
- B. 4:40
- C. 8:10
- D. 8:04

Question 3

The Oakdale Football Club counted 47 206 tickets sold across the season. In this number, what is the value of the digit 7?

- A. 70
- B. 700
- C. 7
- D. 7 000

Question 4

A bookshelf is 1.8 m tall. How many centimetres is this?

- A. 18
- B. 180
- C. 1800
- D. 0.018

Question 5

A toy block is a cube. How many vertices does the cube have?

- A. 6
- B. 12
- C. 8
- D. 4

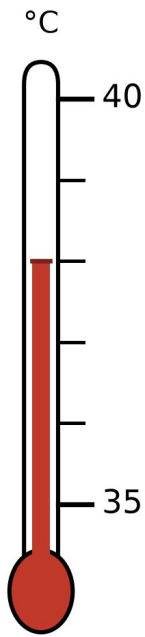
Question 6

A floor tile has four right angles. Its sides are 30 cm, 20 cm, 30 cm and 20 cm. What is the most specific name for the shape of the tile?

- A. Rectangle
- B. Square
- C. Rhombus
- D. Trapezium

Question 7

The thermometer shows Isla's temperature when she was unwell.



A clinical thermometer with only two labels, 35 and 40, and five equal tick spaces between them; the top of the red liquid stands three spaces above the 35 label

What temperature does the thermometer show?

- A. 37 °C
- B. 39 °C
- C. 36 °C
- D. 38 °C

Question 8

Grace planted $\frac{3}{4}$ of her garden bed with beans. What is $\frac{3}{4}$ as a percentage?

- A. 34%
- B. 25%
- C. 75%
- D. 43%

Question 9

A job sheet at work reads $3 \times 4 + 6 \times 2$. Otis works it out using the correct order of operations. What answer does he get?

- A. 36
- B. 24
- C. 60
- D. 18

Question 10

A rectangular garden bed is 3.5 m long and 2 m wide. What is its perimeter?

- A. 5.5 m
- B. 7 m²
- C. 14 m
- D. 11 m

Question 11

Chloe's receipt shows a total of \$58.47. What is this amount to the nearest dollar?

- A. \$58
- B. \$59
- C. \$58.50
- D. \$60

Question 12

A jacket costs \$70 at full price. The shop takes 20% off the full price. What is the sale price of the jacket?

- A. \$14
- B. \$50
- C. \$56
- D. \$84

Question 13

Which tool is the best choice for measuring the length of a garden bed that is about 3 m long?

- A. Kitchen scales
- B. A tape measure
- C. A thermometer
- D. A measuring jug

Question 14

A watermelon has a mass of 2.4 kg. How many grams is this?

- A. 2 400
- B. 240
- C. 24
- D. 24 000

Question 15

At Oakdale station, one line runs a train every 8 minutes and another line runs a train every 12 minutes. Both lines run a train at the same moment. How many minutes pass before the two lines next run a train at the same moment?

- A. 96
- B. 4
- C. 20
- D. 24

Question 16

Jonah's soccer training starts at 2:45 pm. The training runs for 1 hour and 50 minutes. What time does it finish?

- A. 4:25 pm
- B. 4:35 pm
- C. 3:35 pm
- D. 4:45 pm

Question 17

Lachlan's shift at the Oakdale Library starts at 6:30 pm. What is this time in 24-hour time?

- A. 06:30
- B. 16:30
- C. 18:30
- D. 12:30

Question 18

The table shows the number of visitors to the Oakdale Library on four days of one week. How many more visitors came on Thursday than on Tuesday?

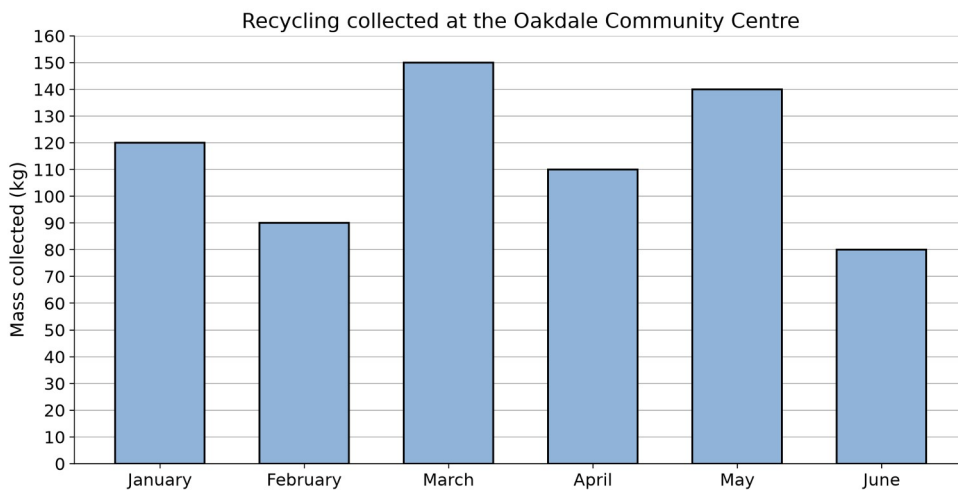
Day	Number of visitors
Monday	45
Tuesday	38
Wednesday	52
Thursday	60

Made-up data: the day labels and every number of visitors in this table are made up for this practice set.

- A. 22
- B. 98
- C. 14
- D. 8

Question 19

The bar chart shows the mass of recycling collected at the Oakdale Community Centre in each month from January to June. How many more kilograms were collected in March than in February?



A bar chart titled Recycling collected at the Oakdale Community Centre, with one bar for each month from January to June against a vertical axis labelled Mass collected (kg) running from 0 to 160 in steps of 10

Made-up data: every mass on this chart is made up for this practice set.

- A. 240
- B. 60
- C. 150
- D. 20

Question 20

A storage box is a rectangular prism 50 cm long, 30 cm wide and 40 cm high. What is its volume?

- A. $6\,000\text{ cm}^3$
- B. $1\,500\text{ cm}^3$
- C. 120 cm^3
- D. $60\,000\text{ cm}^3$

Question 21

A 2 L bottle of water is poured into cups that each hold 250 mL. How many full cups does the bottle fill?

- A. 125
- B. 80
- C. 8
- D. 4

Question 22

Oscar drives 240 km in 3 hours at a steady speed. What is his speed in km/hr?

- A. 80 km/hr
- B. 720 km/hr
- C. 243 km/hr
- D. 3 km/hr

Question 23

Twelve metres of fence wire cost \$ 156. What is the price per metre?

- A. \$ 144
- B. \$ 1872
- C. \$ 15.60
- D. \$ 13

Question 24

A quote for a job is \$ 340 before GST. GST adds 10% to the quote. What is the total of the quote with GST?

- A. \$ 350
- B. \$ 374
- C. \$ 306
- D. \$ 408

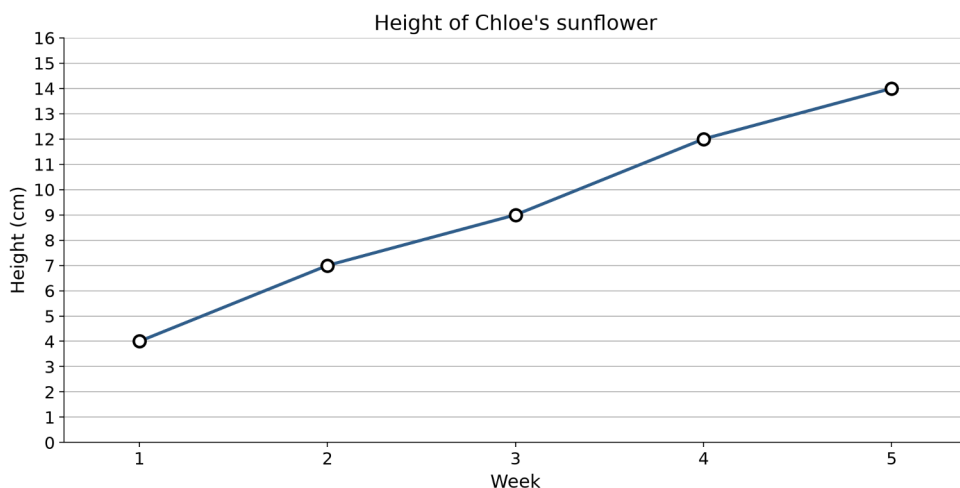
Question 25

In one year, 3 March is a Tuesday. What day of the week is 17 March in the same year?

- A. Tuesday
- B. Wednesday
- C. Monday
- D. Thursday

Question 26

The line graph shows the height of Chloe's sunflower at the end of each of five weeks. What was its height at the end of week 4?



A line graph titled Height of Chloe's sunflower, with one marked point for each of weeks 1 to 5 against a vertical axis labelled Height (cm) running from 0 to 16 in steps of 1

Made-up data: every height on this graph is made up for this practice set.

- A. 9 cm
- B. 14 cm
- C. 12 cm
- D. 10 cm

Question 27

Ferries leave Oakdale for Morrison Island at the times in this timetable. Umar arrives at the ferry at 2:30 pm. What is the departure time of the first ferry he can catch?

Ferry	Departure time
Ferry 1	1:45 pm
Ferry 2	2:05 pm
Ferry 3	2:25 pm
Ferry 4	2:45 pm
Ferry 5	3:05 pm

Made-up data: the ferry names and every departure time in this timetable are made up for this practice set.

- A. 2:25 pm
- B. 2:45 pm
- C. 3:05 pm
- D. 2:05 pm

Question 28

An arrow on a sign points east. The sign is turned through a half turn. Which way does the arrow point now?

- A. North
- B. South
- C. East
- D. West

Question 29

A tile pattern starts with 3 tiles at stage 1. Each new stage adds 4 tiles. How many tiles are in stage 8?

- A. 31
- B. 35
- C. 27
- D. 32

Question 30

On a plan of a park, 1 cm represents 4 m. A path measures 6 cm on the plan. How long is the path in real life?

- A. 10 m
- B. 1.5 m
- C. 24 m
- D. 64 m

Question 31

A bottling machine fills 120 bottles in 3 hours at a steady rate. How many bottles does it fill in 5 hours?

- A. 72
- B. 600
- C. 200
- D. 40

Question 32

Two friends share \$ 450 in the ratio 2 : 3. What does each friend get?

- A. \$225 and \$225
- B. \$180 and \$270
- C. \$300 and \$150
- D. \$90 and \$360

Question 33

In a survey of 300 people, 40% said they ride a bike to work. How many people said they ride a bike to work?

- A. 120
- B. 180
- C. 12
- D. 40

Question 34

Yusuf buys 62 bottles of water at \$19 each. He estimates the total cost by rounding each number to the nearest ten before he multiplies. What estimate does he get?

- A. \$1178
- B. \$1140
- C. \$1240
- D. \$1200

Question 35

A spreadsheet holds 15 in cell A2 and 4 in cell B2. Cell C2 holds the rule $=A2-B2$. What value does cell C2 show?

- A. 19
- B. 60
- C. 11
- D. 15

Question 36

Isaac buys 3 tickets at \$14.50 each. He pays with a \$50 note. Which calculation gives his change?

- A. $(50 - 3) \times 14.50$
- B. $50 - 3 \times 14.50$
- C. $3 \times (50 - 14.50)$
- D. $50 + 3 \times 14.50$

Question 37

A bike rally uses the rule $S = 4c + 3$, where c is the number of cars and S is the number of people in the rally. What is S when $c = 6$?

- A. 27
- B. 24
- C. 36
- D. 13

Question 38

Which expression means '3 more than twice n '?

- A. $3n + 2$
- B. $2(n + 3)$
- C. $3(n + 2)$
- D. $2n + 3$

Question 39

A cement mixer hires out for \$38 per hour. What is the cost of hiring it for 6.5 hours?

- A. \$228
- B. \$247
- C. \$266
- D. \$44.50

Question 40

Farid drives at a steady speed of 70 km/hr for 3.5 hours. How far does he travel?

- A. 20 km
- B. 140 km
- C. 245 km
- D. 280 km

Question 41

A café wall is a rectangle 4.2 m long and 2.5 m high. What is its area?

- A. 10.5 m^2
- B. 13.4 m
- C. 6.7 m^2
- D. 10 m^2

Question 42

A shop sells eggs in two cartons: a carton of 12 eggs for \$5.40, and a carton of 8 eggs for \$4.00. Which carton is the better buy, and why?

- A. The carton of 8, at \$0.50 per egg
- B. The carton of 12, at \$0.50 per egg
- C. The carton of 8, because \$4.00 is less than \$5.40
- D. The carton of 12, at \$0.45 per egg

Question 43

Dev's rent is \$ 400 a month. It rises by 5%. What is his new monthly rent?

- A. \$ 405
- B. \$ 420
- C. \$ 20
- D. \$ 380

Question 44

Seven plants cost \$ 50 in total, and each plant costs the same amount. What is the cost of one plant, to the nearest cent?

- A. \$ 7.15
- B. \$ 7.10
- C. \$ 7.14
- D. \$ 7.00

Question 45

Tilly earns \$ 26 per hour. On Saturdays she is paid time-and-a-half, which means 1.5 times her usual hourly rate. What is her Saturday hourly rate?

- A. \$ 39 per hour
- B. \$ 52 per hour
- C. \$ 13 per hour
- D. \$ 36 per hour

Question 46

Xander buys a bike for \$ 360 using a buy now, pay later plan with 8 equal weekly payments. How much is each payment?

- A. \$ 60
- B. \$ 352
- C. \$ 4.50
- D. \$ 45

Question 47

Sanjay mixes garden spray in the ratio 1 : 3 of concentrate to water. He makes 8 L of spray. How much concentrate and how much water does he use?

- A. 4 L of concentrate and 4 L of water
- B. 2 L of concentrate and 6 L of water
- C. 1 L of concentrate and 3 L of water
- D. 6 L of concentrate and 2 L of water

Question 48

Museum entry is \$12 for an adult and \$7 for a child. A group of 4 adults and 2 children visits the museum. What is the total entry cost for the group?

- A. \$114
- B. \$50
- C. \$62
- D. \$76

Question 49

The Oakdale Drama Club books a hall for its dinner night. The hall hire is \$120, and food costs \$6 per person. There are 35 people at the night. What is the total cost of the night?

- A. \$330
- B. \$4410
- C. \$210
- D. \$126

Question 50

At Celia's food truck, burgers cost \$6.50 each and drinks cost \$2.50 each. A customer buys 3 burgers and 2 drinks, and pays with a \$30 note. What change does the customer get?

- A. \$24.50
- B. \$10.50
- C. \$6.50
- D. \$5.50

End of practice set 1

Chapter 8 GAT Section A numeracy practice — 8B GAT Section A numeracy practice 2

About the GAT and this practice set. The General Achievement Test (GAT) is a statewide test sat by Victorian Certificate of Education (VCE) students, including students doing the VCE Vocational Major (VM). VM students sit Section A only. Section A holds two-stage writing tasks and 100 multiple-choice questions: 50 numeracy questions and 50 questions about texts. This practice set gives you 50 original multiple-choice questions in the numeracy style, using only the skills from earlier chapters of this book, at this book's level. The writing tasks and the text-based questions are not practised here.

Materials: pen, paper and one basic calculator. There are 50 multiple-choice questions, each worth 1 mark (50 marks). Suggested time: about 75 minutes, or roughly one and a half minutes per question. If an item is slowing you down, choose your best guess, mark it, and come back to it if you have time at the end.

About the data in this practice set. Every name, place, price, time and measurement in this practice set is **made up** (not real): pretend businesses, pretend people and pretend numbers, built for this book so you can practise the mathematics. Nothing here is real data about a real business, person or place. One fact here is real: Australia's GST is 10%.

Choose the response that is correct for the question.

Questions 1–4

Nina works at Rye Lane Bakery. On a Saturday morning the bakery sells bread rolls, pies and trays of pastries.

Question 1

A customer buys a loaf of sourdough bread for \$7.85 and a pie for \$6.35. How much does the customer pay altogether?

- A. \$13.20
- B. \$14.00
- C. \$14.20
- D. \$15.20

Question 2

The bakery sells 6 bread rolls for \$4.50, and 12 bread rolls for \$8.40. What is the cheaper price per bread roll?

- A. \$0.70
- B. \$0.75
- C. \$1.33
- D. \$7.00

Question 3

At the end of the day, every tray of pastries is reduced by 25%. A tray usually costs \$16.00. What is the reduced price of one tray?

- A. \$4.00
- B. \$12.00
- C. \$13.50
- D. \$20.00

Question 4

A bulk order of flour works out at \$37.465 per bag. What is the cost of one bag of flour, to the nearest cent?

- A. \$37.00
- B. \$37.46
- C. \$37.50
- D. \$37.47

Questions 5–8

Wayne drives a delivery van for Kingsford Couriers.

Question 5

Wayne fills the van with 40 litres of fuel. The fuel costs \$1.85 per litre. What does the fuel cost altogether?

- A. \$41.85
- B. \$7.40
- C. \$74.00
- D. \$76.00

Question 6

Wayne drives 135 km at a steady speed. The trip takes 2.5 hours. What is his average speed, in km/hr?

- A. 54 km/hr
- B. 137.5 km/hr
- C. 337.5 km/hr
- D. 540 km/hr

Question 7

Wayne uses his own car for a work trip and drives 22 km. His employer pays an allowance of 85 cents per kilometre. How much does Wayne claim for this trip?

- A. \$1.87
- B. \$22.85
- C. \$1 870.00
- D. \$18.70

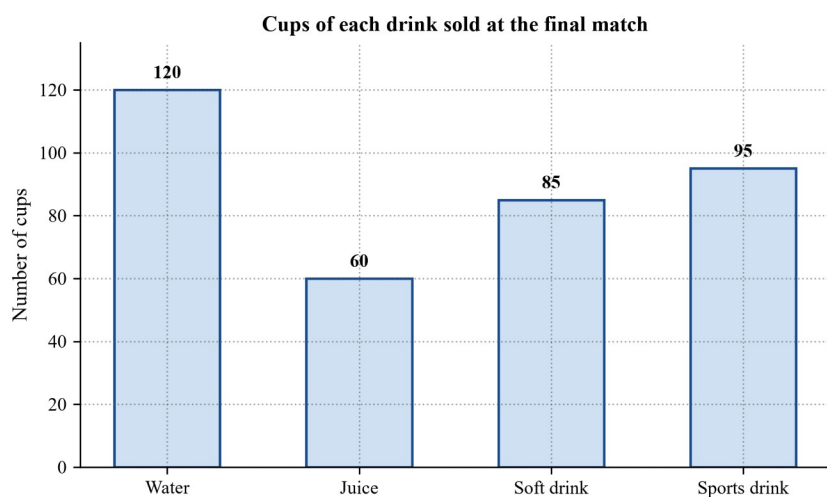
Question 8

Wayne's job card says a delivery must arrive by 14:40. How is this time written in 12-hour form?

- A. 2:40 am
- B. 2:40 pm
- C. 4:40 pm
- D. 12:40 pm

Questions 9–12

The Eastvale Football Club canteen sold drinks at the club's final match. The bar chart shows how many cups of each drink were sold.



Question 9

How many cups of water were sold?

- A. 95 cups
- B. 120 cups
- C. 110 cups
- D. 125 cups

Question 10

How many cups of drinks were sold altogether?

- A. 265 cups
- B. 300 cups
- C. 360 cups
- D. 350 cups

Question 11

How many more cups of water than cups of juice were sold?

- A. 60 cups
- B. 2 cups
- C. 120 cups
- D. 180 cups

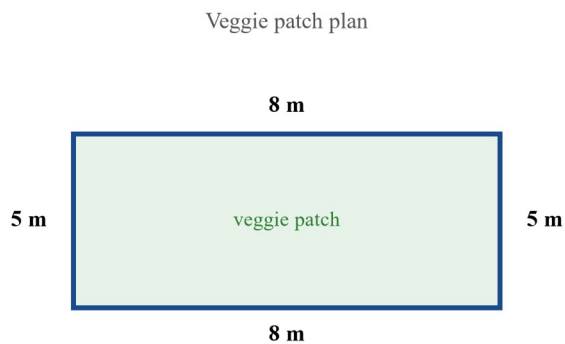
Question 12

Each cup of juice costs the canteen 90 cents to make, and every cup of juice sold for \$2.50. What was the canteen's profit on the juice?

- A. \$54.00
- B. \$150.00
- C. \$204.00
- D. \$96.00

Questions 13–16

Karl grows vegetables at Stonebridge Farm. His veggie patch is a rectangle, 8 m long and 5 m wide, as shown on the plan.



Question 13

Karl puts fencing all the way around the veggie patch. What length of fencing does he need?

- A. 13 m
- B. 21 m
- C. 26 m
- D. 40 m

Question 14

Karl covers the whole veggie patch with compost. What is the area of the veggie patch?

- A. 40 m²
- B. 13 m²
- C. 20 m²
- D. 26 m²

Question 15

The fencing costs \$12.50 per metre. What does the fencing for the whole veggie patch cost?

- A. \$162.50
- B. \$325.00
- C. \$500.00
- D. \$3 250.00

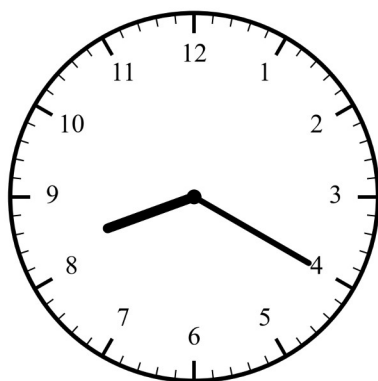
Question 16

On Karl's plan, 1 cm represents 2 m. How long is the 8 m side of the veggie patch on the plan?

- A. 6 cm
- B. 10 cm
- C. 16 cm
- D. 4 cm

Questions 17–20

Janet catches the bus to work on weekday mornings. The clock shows the time her bus leaves the stop.

**Question 17**

What time does the clock show?

- A. 4:40 am
- B. 7:20 am
- C. 8:20 am
- D. 8:04 am

Question 18

The bus trip takes 50 minutes. What time does the bus arrive at Janet's workplace?

- A. 7:30 am
- B. 8:50 am
- C. 10:10 am
- D. 9:10 am

Question 19

Janet's netball training starts at 4:45 pm and finishes at 6:05 pm. How long is the training?

- A. 1 h 20 min
- B. 1 h 15 min
- C. 2 h 20 min
- D. 2 h 40 min

Question 20

A bus ticket costs \$2.30. Janet pays with a \$10 note. How much change does she get?

- A. \$8.30
- B. \$7.70
- C. \$23.00
- D. \$12.30

Questions 21–24

Oscar is the cook at the Bluebird Diner.

Question 21

A recipe needs 1.5 kg of flour. How many grams of flour is this?

- A. 150 g
- B. 15 000 g
- C. 1500 g
- D. 15 g

Question 22

The soup pot holds 4.5 L of soup. Each bowl of soup is 250 mL. How many full bowls can be poured from the pot?

- A. 18 bowls
- B. 1.8 bowls
- C. 45 bowls
- D. 180 bowls

Question 23

Oscar stores sugar cubes in a box that is 20 cm long, 15 cm wide and 10 cm high. What is the volume of the box?

- A. 45 cm^3
- B. 300 cm^3
- C. 350 cm^3
- D. 3000 cm^3

Question 24

A rectangular water tank at the diner is 40 cm long, 30 cm wide and 25 cm high. How many litres of water does the tank hold when it is full?

- A. 3 L
- B. 30 L
- C. 0.03 L
- D. 30 000 L

Questions 25–28

Farid is training at the Ironworks Gym.

Question 25

Farid counts 34 heartbeats in 30 seconds. What is his pulse rate, in beats per minute?

- A. 68 beats per minute
- B. 17 beats per minute
- C. 34 beats per minute
- D. 64 beats per minute

Question 26

A box of cereal bars holds 5 serves. The label says each serve is 480 kJ. How many kJ are in the whole box?

- A. 96 kJ
- B. 485 kJ
- C. 2400 kJ
- D. 2880 kJ

Question 27

A gym poster says adults should aim for 8 glasses of water a day. Each glass holds 250 mL. How many litres of water is this?

- A. 8.25 L
- B. 2 L
- C. 20 L
- D. 2000 L

Question 28

The label on Farid's cough syrup says to take 5 mL three times a day. The bottle holds 100 mL. How many full days will the bottle last?

- A. 7 days
- B. 15 days
- C. 20 days
- D. 6 days

Questions 29–32

Steve works at Bramwell Hardware.

Question 29

A quality-control rule says a timber plank passes if its length is between 118 cm and 122 cm. Planks of exactly 118 cm or exactly 122 cm also pass. Which of these planks passes?

- A. 117.5 cm
- B. 122.5 cm
- C. 122 cm
- D. 123 cm

Question 30

Steve mixes plant food and water in the ratio 1:2 (plant food : water). He uses 6 L of water. How much plant food does he use?

- A. 3 L
- B. 6 L
- C. 9 L
- D. 12 L

Question 31

Steve and his sister share \$700 of market takings in the ratio 3:4 (Steve : sister). How much does Steve get?

- A. \$233.33
- B. \$400.00
- C. \$2 100.00
- D. \$300.00

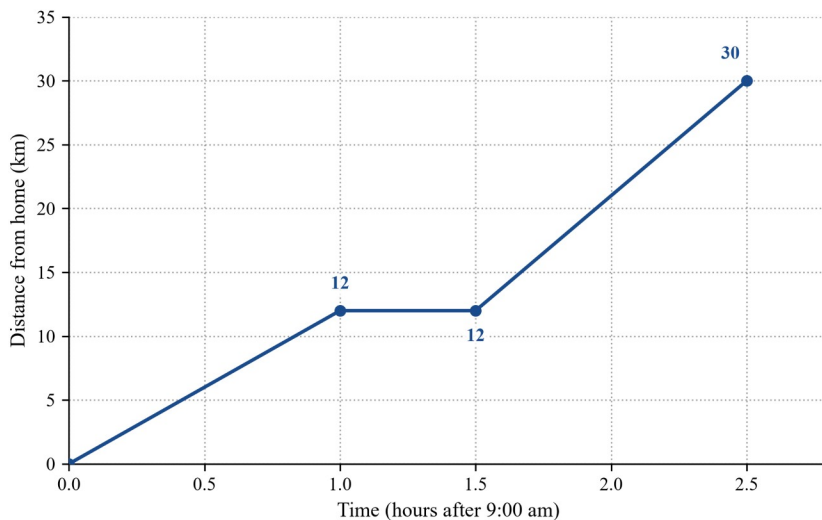
Question 32

Since Steve started using the jobs app, his average time for a standard job has dropped from 50 minutes to 40 minutes. What is the percentage decrease in the job time?

- A. 10 %
- B. 20 %
- C. 25 %
- D. 40 %

Questions 33–36

Cathy rides her bike from home to the beach. She leaves home at 9:00 am, and the line graph shows her distance from home during the first 2.5 hours of the trip. Cathy stops once, for a break.



Question 33

How far from home was Cathy 1 hour after she left?

- A. 12 km
- B. 6 km
- C. 18 km
- D. 30 km

Question 34

Between which two times was Cathy having her break?

- A. 9:00 am to 9:30 am
- B. 9:30 am to 10:00 am
- C. 10:00 am to 10:30 am
- D. 10:30 am to 11:00 am

Question 35

What was Cathy's average speed, in km/hr, during the riding part after her break?

- A. 12 km/hr
- B. 20 km/hr
- C. 30 km/hr
- D. 18 km/hr

Question 36

The whole trip was 30 km and took 2.5 hours, including the break. What was Cathy's average speed, in km/hr, for the whole trip?

- A. 15 km/hr
- B. 12 km/hr
- C. 18 km/hr
- D. 75 km/hr

Questions 37–40

Trudy works at the Fairlight Swim School.

Question 37

For the baby-swim class the pool water must be at least 26 °C. The water temperature is 22.5 °C. How many degrees must the water warm up before the class can run?

- A. 3 °C
- B. 4 °C
- C. 48.5 °C
- D. 3.5 °C

Question 38

Which of these temperatures is closest to normal human body temperature?

- A. 37 °C
- B. 4 °C
- C. 20 °C
- D. 100 °C

Question 39

Trudy needs to measure the length of the 25 m pool lane as quickly and as accurately as she can. Which tool is the best choice for this job?

- A. a measuring jug
- B. a ruler
- C. a trundle wheel
- D. a thermometer

Question 40

Which of these is the best estimate for the height of a standard doorway?

- A. 2 cm
- B. 2 m
- C. 20 cm
- D. 20 m

Questions 41–44

Paula shops at Clifton Fresh Markets and looks after her own money.

Question 41

A lawn mower is advertised at \$220 before GST. The GST is 10% of the pre-GST price. How much GST is added to the price of the mower?

- A. \$22.00
- B. \$2.20
- C. \$220.00
- D. \$242.00

Question 42

Paula buys a \$360 fridge on a buy-now-pay-later plan. She pays for it in 4 equal payments with no interest, and a \$15 booking fee is added to the first payment only. How much is Paula's first payment?

- A. \$90.00
- B. \$93.75
- C. \$375.00
- D. \$105.00

Question 43

Paula has \$2 400 in a savings account. The account pays 5% simple interest each year. How much interest does Paula earn in 1 year?

- A. \$12.00
- B. \$480.00
- C. \$120.00
- D. \$2 520.00

Question 44

The price of a box of apples rises from \$12.00 to \$15.00. What is the percentage increase in the price?

- A. 3 %
- B. 25 %
- C. 20 %
- D. 125 %

Questions 45–47

Umar makes and sells wooden picture frames. He keeps his sales in a spreadsheet.

	A	B	C	D
1	Item	Number sold	Price each (\$)	Sales (\$)
2	Small frame	12	18	216
3	Medium frame	9	25	225
4	Large frame	6	34	204

Made-up data: the items and every number in this table are made up for this practice set.

Question 45

Umar wants the spreadsheet to work out the sales in cell D2. Which formula should he type into D2?

- A. =B2+C2
- B. =SUM(B2 : C2)
- C. =2B*2C
- D. =B2 *C2

Question 46

For a custom framing job Umar charges a \$40 design fee plus \$25 for each hour of work. Let h be the number of hours of work and C be the total cost, in dollars. Which rule gives C ?

- A. $C = 40 + 25h$
- B. $C = 40h + 25$
- C. $C = 65h$
- D. $C = 40 + 25 + h$

Question 47

Umar's cost rule for a framing job is $C = 40 + 25h$, where h is the number of hours of work and C is the total cost, in dollars. Find C when $h = 6$.

- A. \$150.00
- B. \$240.00
- C. \$190.00
- D. \$390.00

Questions 48–50

Derek is building a garden shed in his backyard.

Question 48

Derek's tool box is a rectangular prism. How many edges does a rectangular prism have?

- A. 4
- B. 12
- C. 6
- D. 8

Question 49

Derek rotates a square floor tile a quarter turn about its centre. How many degrees does the tile turn through?

- A. 45°
- B. 180°
- C. 360°
- D. 90°

Question 50

Derek lays a border of decorative tiles in a repeating pattern: square, triangle, circle, hexagon, then square, triangle, circle, hexagon again, and so on. What shape is the 20th tile in the border?

- A. hexagon
- B. square
- C. triangle
- D. circle

End of Practice Set 2

Chapter 8 GAT Section A numeracy practice — Answers and fully-worked solutions

This section gives the answers and fully-worked solutions for the two GAT Section A numeracy practice sets in this chapter: 8A (practice set 1) and 8B (practice set 2). Work each practice set first, then check your thinking here. Every question has exactly one correct answer. Where a question asked for a rounded answer or an estimate, the question stated how to round, and the working restates that precision at the rounding step; full precision is carried through every step before it. As the practice sets say, every name, place, price and number in them is made up for practice.

8A — Answers

Questions 1–25

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1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
B	A	D	B	C	A	D	C	B	D	A	C	B	A	D	B	C	A	B	D	C	A	D	B	A

Questions 26–50

Q
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2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5
6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
C	B	D	A	C	C	B	A	D	C	B	A	D	B	C	A	D	B	C	A	D	B	C	A	D

Rounding notes. Question 11 rounds to the nearest dollar, as the question asked: the first decimal place of \$58.47 is 4, and 4 is less than 5, so round down — \$58. Question 34 asks for an estimate built by rounding each number to the nearest ten: 62 rounds to 60, 19 rounds to 20, and 60×20 gives the estimate \$1 200. Question 44 rounds to the nearest cent, as the question asked: $50 \div 7 = 7.142857 \dots$, the third decimal place is 2, and 2 is less than 5, so round down — \$7.14. Every other answer in practice set 1 is an exact value.

8A — Fully-worked solutions

Question	Answer	Working
1	B	A doorway must let a tall adult walk through, so it is about 2 m high. (20 cm is about the length of a ruler and 2 cm is about the width of a thumbnail — both far too short — and 20 m is taller than most houses.) Answer B.
2	A	The short hour hand is a little past the 8, so the hour is 8. The long minute hand points at the 4, and each big number stands for 5 minutes: $4 \times 5 = 20$. The clock shows 8:20. (4:40 swaps the two hands, 8:10 reads the 4 as 10 minutes, and 8:04 reads the 4 as 4 minutes.) Answer A.
3	D	Count the places from the right: ones

Question	Answer	Working
		6, tens 0, hundreds 2, thousands 7. The digit 7 sits in the thousands place, so its value is $7 \times 1000 = 7\,000$. (70 is a value in the tens place, 700 is in the hundreds place, and 7 is in the ones place.) Answer D.
4	B	Metres to centimetres steps down to a smaller unit, so multiply by 100: $1.8 \times 100 = 180$ cm. (18 cm multiplies by 10, 1800 is the number of millimetres — it multiplies by 1000 — and 0.018 divides by 100.) Answer B.
5	C	A cube has 8 vertices: 4 corners on the top face and 4 corners on the bottom face. (6 counts the faces, 12 counts the edges, and 4 counts the corners of one face only.) Answer C.
6	A	Four right angles make the tile a rectangle. A square needs all 4 sides equal, but these sides are 30 cm and 20 cm — two different lengths. (A rhombus has equal sides but no right angles, and a trapezium has only one pair of parallel sides.) Answer A.
7	D	The labels are 35 and 40, so the gap is $40 - 35 = 5$ degrees over 5 equal spaces: one space is $5 \div 5 = 1$ °C. The top of the liquid stands 3 spaces above 35: $35 + 3 \times 1 = 38$ °C. (36 °C counts 1 space, 37 °C counts 2 spaces, and 39 °C counts 4 spaces.) Answer D.
8	C	A fraction becomes a percentage by multiplying by 100: $\frac{3}{4} \times 100 = 75\%$. (34 % and 43 % just reuse the digits 3 and 4, and 25 % is $\frac{1}{4}$ — the part of the garden bed not planted with beans.) Answer C.
9	B	Multiplication comes before addition: $3 \times 4 = 12$ and $6 \times 2 = 12$, then $12 + 12 = 24$. (36 works straight left to right — $(3 \times 4 + 6) \times 2$; 60 adds the middle numbers first — $3 \times (4 + 6) \times 2$; and 18 stops too early at $3 \times 4 + 6$.) Answer B.

Question	Answer	Working
10	D	The perimeter goes all the way around: $P = 2 \times (3.5 + 2) = 2 \times 5.5 = 11 \text{ m.}$ (5.5 m is length plus width — only half the way around; 7 is the area, 3.5×2, and in square units, not a length; and 14 is $2 \times 3.5 \times 2$ — it multiplies the wrong three numbers.) Answer D.
11	A	To the nearest dollar, look at the first decimal place: \$58.47 has 4 there, and 4 is less than 5, so round down — \$58. (\$59 rounds up when the deciding digit says down, \$58.50 rounds to the nearest ten cents instead, and \$60 rounds to the nearest ten dollars.) Answer A.
12	C	The discount is 20 % of \$70: $\frac{20}{100} \times 70 = 14.$ Sale price: $70 - 14 = 56,$ so \$56. One step works too: the sale price keeps 80 % , and $\frac{80}{100} \times 70 = 56$. (\$14 is only the discount, \$50 takes \$20 off instead of 20 %, and \$84 adds 20 % instead of taking it off.) Answer C.
13	B	A garden bed about 3 m long is a length, and a tape measure measures lengths in centimetres and metres. (Kitchen scales measure mass, a thermometer measures temperature, and a measuring jug measures the capacity of a liquid.) Answer B.
14	A	Kilograms to grams steps down to a smaller unit, so multiply by 1000: $2.4 \times 1000 = 2\,400 \text{ g.}$ (240 g and 24 g slip the decimal point, and 24 000 g multiplies by 10 000.) Answer A.
15	D	List the multiples: 8, 16, 24, 32, ... for the 8-minute line and 12, 24, 36, ... for the 12-minute line. The first number in both lists is 24, so the next train-together moment comes after 24 minutes. (96 is 8×12 — a common multiple, but not the first one; 4 is the highest common factor; and 20 is $8 + 12$.) Answer D.
16	B	Add the 1 hour first: $2:45 \text{ pm} + 1 \text{ h} = 3:45 \text{ pm}$. Then add the 50

Question	Answer	Working
		minutes: $45 + 50 = 95$ minutes past 3, and 95 minutes is 1 hour and 35 minutes, so training finishes at 4:35 pm. (4:25 pm adds only 1 h 40 min, 3:35 pm adds only the 50 minutes, and 4:45 pm adds 2 hours.) Answer B.
17	C	A pm time becomes 24-hour time by adding 12 to the hour: $6 + 12 = 18$, so 6:30 pm is 18:30. (06:30 is 6:30 in the morning, 16:30 is 4:30 pm, and 12:30 is just after noon.) Answer C.
18	A	Read the table: Thursday 60 visitors, Tuesday 38. "How many more" compares with subtraction: $60 - 38 = 22$ more visitors. (98 adds the two days together, 14 compares Wednesday with Tuesday — $52 - 38$ — and 8 compares Thursday with Wednesday — $60 - 52$.) Answer A.
19	B	Read the two bars off the chart: March 150 kg and February 90 kg. $150 - 90 = 60$ kg more. (240 adds the two months, 150 is the March bar on its own, and 20 comes from reading the April bar — 110 kg — instead of March: $110 - 90 = 20$.) Answer B.
20	D	Volume $= l \times w \times h = 50 \times 30 \times 40 = 60\,000$ cm^3 . (6 000 cm^3 drops a zero, 1 500 cm^3 is only the base — 50×30 — and 120 adds the three sides, $50 + 30 + 40$.) Answer D.
21	C	2 L = 2000 mL. Cups $= 2000 \div 250 = 8$ full cups. (125 is the division upside down — $250 \div 2$; 80 slips the decimal point — $2000 \div 25$; and 4 pours only 1 L — $1000 \div 250$.) Answer C.
22	A	Speed = distance $\div$ time: $240 \div 3 = 80$ km/hr. (720 km/hr multiplies instead — 240×3 ; 243 km/hr adds — $240 + 3$; and 3 is the number of hours, not a speed.) Answer A.
23	D	Price per metre = total cost $\div$ metres: $156 \div 12 = 13$, so \$13 per

Question	Answer	Working
		metre. (\$144 subtracts 12 from 156, \$1 872 multiplies — 156×12 — and \$15.60 divides by 10 instead of 12.) Answer D.
24	B	GST adds 10 % of the before-GST quote: $\frac{10}{100} \times 340 = 34$. Total: $340 + 34 = 374$, so \$374. (\$350 adds \$10 instead of 10 %, \$306 takes 10 % off, and \$408 adds 20 %.) Answer B.
25	A	From 3 March to 17 March is $17 - 3 = 14$ days, and $14 \div 7 = 2$, so 14 days is exactly 2 weeks. Day names repeat every 7 days, so 17 March is a Tuesday as well. (Wednesday, Monday and Thursday all come from counting a leftover day or two that is not there.) Answer A.
26	C	Find week 4 on the horizontal axis and read the marked point above it: it sits on the 12 gridline, so the sunflower was 12 cm tall at the end of week 4. (9 cm is the week-3 point, 14 cm is the week-5 point, and 10 cm misreads the height of the week-4 point.) Answer C.
27	B	Umar arrives at 2:30 pm. The 1:45 pm, 2:05 pm and 2:25 pm ferries have all already left, so the first ferry he can catch departs at 2:45 pm. (3:05 pm is a ferry he can catch, but it is the one after the first.) Answer B.
28	D	A half turn swings the arrow round to point the opposite way: east becomes west. (North is a quarter turn one way, south is a quarter turn the other way, and east means no turn at all.) Answer D.
29	A	From stage 1 to stage 8 there are $8 - 1 = 7$ jumps of 4 tiles: $3 + 7 \times 4 = 3 + 28 = 31$ tiles. (35 counts 8 jumps — $3 + 8 \times 4$; 27 counts only 6 jumps; and 32 is 4×8 — it forgets the 3 tiles at stage 1.) Answer A.
30	C	1 cm represents 4 m, so 6 cm represents $6 \times 4 = 24$ m. (10 m adds 6 and 4, 1.5 m divides instead of

Question	Answer	Working
		multiplying — $6 \div 4$ — and 64 m just sticks the two numbers 6 and 4 together.) Answer C.
31	C	Find one hour first: $120 \div 3 = 40$ bottles per hour. Then 5 hours: $40 \times 5 = 200$ bottles. (72 swaps the hours — $120 \div 5 \times 3$; 600 multiplies — 120×5; and 40 stops at one hour.) Answer C.
32	B	The ratio 2:3 gives $2 + 3 = 5$ equal parts in all. One part: $450 \div 5 = 90$, so \$90. The two shares are $2 \times 90 = 180$ and $3 \times 90 = 270$: \$180 and \$270. Check: $180 + 270 = 450$ ✓. (\$225 and \$225 splits the money in half and ignores the ratio, \$300 and \$150 shares it 2:1 — the ratio backwards — and \$90 and \$360 uses 1 part and 4 parts.) Answer B.
33	A	40 % of 300: $\frac{40}{100} \times 300 = 120$ people. (180 is 60 % of 300, 12 slips the decimal point, and 40 is just the percentage number picked out of the question.) Answer A.
34	D	Round each number to the nearest ten, as the question asked: 62 rounds to 60 and 19 rounds to 20. Estimate: $60 \times 20 = 1\,200$, so \$1 200. (\$1 178 is the exact cost, 62×19, not an estimate; \$1 140 rounds only the 62 — 60×19; and \$1 240 rounds only the 19 — 62×20.) Answer D.
35	C	The rule $=A2-B2$ means subtract: $15 - 4 = 11$. Cell C2 shows 11. (19 adds the two cells, 60 multiplies them, and 15 is just the value sitting in A2.) Answer C.
36	B	Change = amount paid – cost of the tickets. The cost of 3 tickets is 3×14.50, and multiplication comes first, so the change is $50 - 3 \times 14.50 = 50 - 43.50$, and that is \$6.50. (Option A subtracts 3 from 50 before it multiplies; option C subtracts one ticket price from 50 and multiplies the lot by 3; and option D adds the cost instead of subtracting it.) Answer B.
37	A	Substitute $c = 6$ into $S = 4c + 3$:

Question	Answer	Working
		$S = 4 \times 6 + 3 = 24 + 3 = 27$. (24 forgets the +3; 36 is $4 \times (6 + 3)$ — it adds before it multiplies; and 13 just adds all three numbers, $4 + 6 + 3$.) Answer A.
38	D	Twice n is $2n$, and 3 more than that is $2n + 3$. ($3n + 2$ swaps the two numbers, $2(n + 3)$ doubles the sum of n and 3, and $3(n + 2)$ triples the sum of n and 2.) Answer D.
39	B	Cost = rate $\times$ time: $38 \times 6.5 = 247$, so \$247. (\$228 uses 6 hours — 38×6 ; \$266 uses 7 hours — 38×7 ; and \$44.50 adds 38 and 6.5 instead of multiplying.) Answer B.
40	C	Distance = speed $\times$ time: $70 \times 3.5 = 245$ km. (20 km divides instead — $70 \div 3.5$; 140 km is 70×2 ; and 280 km is 70×4 — it rounds 3.5 hours up to 4.) Answer C.
41	A	Area = $l \times w$: $4.2 \times 2.5 = 10.5$ m ² . (13.4 m is the perimeter — $2 \times (4.2 + 2.5)$ — and in the wrong units; 6.7 adds the two measurements — $4.2 + 2.5$; and 10 drops the 0.2 — it is 4×2.5 .) Answer A.
42	D	Find the cost per egg for each carton. Carton of 12: $5.40 \div 12 = 0.45$, so \$0.45 per egg. Carton of 8: $4.00 \div 8 = 0.50$, so \$0.50 per egg. \$0.45 is less than \$0.50, so the carton of 12 is the better buy, at \$0.45 per egg. (The carton of 8 costs more per egg; option B names the right carton with the wrong unit price; and option C compares the total prices — but the cartons hold different numbers of eggs, so the cheaper total is not automatically the better buy.) Answer D.
43	B	The rise is 5 % of \$400: $\frac{5}{100} \times 400 = 20$. New rent: $400 + 20 = 420$, so \$420. (\$405 adds \$5 instead of 5 %, \$20 is only the rise, and \$380 takes 5 % off.) Answer B.

Question	Answer	Working
44	C	$50 \div 7 = 7.142857 \dots$ To the nearest cent, as the question asked: the third decimal place is 2, and 2 is less than 5, so round down — \$7.14 for one plant. (\$7.15 rounds up when the deciding digit says down, \$7.10 chops off the digits after the first decimal place, and \$7.00 rounds to the nearest dollar.) Answer C.
45	A	Time-and-a-half means rate $\times 1.5$: $26 \times 1.5 = 39$, so \$39 per hour. Two steps works too: half of 26 is 13, and $26 + 13 = 39$. (\$52 per hour is double time — 26×2 ; \$13 per hour is only the half; and \$36 per hour adds \$10 instead of \$13.) Answer A.
46	D	Each payment = total cost $\div$ number of payments: $360 \div 8 = 45$, so \$45. (\$60 divides by 6 instead of 8, \$352 subtracts 8 instead of dividing by it, and \$4.50 slips the decimal point.) Answer D.
47	B	The ratio 1 : 3 gives $1 + 3 = 4$ equal parts in the 8 L of spray. One part: $8 \div 4 = 2$ L. Concentrate is 1 part: 2 L. Water is 3 parts: $3 \times 2 = 6$ L. Check: $2 + 6 = 8$ ✓. (4 L and 4 L halves the mix and ignores the ratio; 1 L and 3 L uses the ratio numbers as litres — that makes only 4 L of spray; and 6 L and 2 L swaps the two amounts.) Answer B.
48	C	Adults: $4 \times 12 = 48$, so \$48. Children: $2 \times 7 = 14$, so \$14. Total: $48 + 14 = 62$, so \$62. (\$114 is $(4 + 2) \times (12 + 7)$ — it adds first and multiplies after; \$50 is $48 + 2$ — it forgets to multiply the children by their price; and \$76 is $4 \times (12 + 7)$ — it charges every person both prices.) Answer C.
49	A	Food cost: $6 \times 35 = 210$, so \$210. Add the one-off hall hire: $210 + 120 = 330$, so \$330. (\$4 410 charges the hall hire per person — $(120 + 6) \times 35$; \$210 is the food on its own; and \$126 just adds 120 and 6.) Answer A.
50	D	Burgers: $3 \times 6.50 = 19.50$, so \$19.50. Drinks: $2 \times 2.50 = 5.00$, so \$5.00. Amount spent:

Question	Answer	Working
		$19.50 + 5.00 = 24.50$, so \$24.50. Change: $30 - 24.50 = 5.50$, so \$5.50. (\$24.50 is the amount spent, not the change; \$10.50 forgets the drinks — $30 - 19.50$; and \$6.50 is the price of one burger.) Answer D.

8B — Answers

Questions 1–25

Questions

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Answers	C	A	B	D	C	A	D	B	B	C	A	D	C	A	B	D	C	D	A	B	C	A	D	B	A

Questions 26–50

Questions

Question	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Answers	C	B	D	C	A	D	B	A	C	D	B	D	A	C	B	A	D	C	B	D	A	C	B	D	A

Rounding notes. Question 4 rounds to the nearest cent, as the question asked: \$37.465 has 5 in the third decimal place, and a deciding 5 rounds up — \$37.47, rounded once only. Every other answer in practice set 2 is an exact value.

8B — Fully-worked solutions

Question	Answer	Working
1	C	Add the cents first: $0.85 + 0.35 = 1.20$ — that is 1 dollar and 20 cents, so write down the 20 c and carry the 1 dollar. Then $7 + 6 + 1 = 14$. The customer pays \$14.20 altogether. (\$13.20 drops the carried dollar, \$14.00 rounds both prices to the nearest dollar before adding, and \$15.20 carries the dollar twice.) Answer C.
2	A	Pack of 12: $8.40 \div 12 = 0.70$, so \$0.70 per roll. Pack of 6: $4.50 \div 6 = 0.75$, so \$0.75 per roll. \$0.70 is less than \$0.75, so the cheaper price per bread roll is \$0.70. (\$0.75 is the dearer pack's price per roll; \$1.33 turns the division upside down — $6 \div 4.50$; and \$7.00 slips the decimal point.) Answer A.

Question	Answer	Working
3	B	The discount is 25 % of \$16.00: $\frac{25}{100} \times 16 = 4$, so \$4.00. Reduced price: $16.00 - 4.00 = 12.00$, so \$12.00. One step works too: the reduced price keeps 75 %, and $\frac{75}{100} \times 16 = 12$. (\$4.00 is only the discount, \$13.50 reads 25 % as \$2.50, and \$20.00 adds 25 % instead of taking it off.) Answer B.
4	D	\$37.465 to the nearest cent: the deciding digit sits in the third decimal place, and it is 5. A deciding 5 rounds up, so one bag costs \$37.47. Round once only. (\$37.00 rounds to the nearest dollar, \$37.46 rounds the deciding 5 down, and \$37.50 rounds twice — \$37.465 up to \$37.47 and then on to \$37.50.) Answer D.
5	C	Cost = price per litre $\times$ number of litres: $1.85 \times 40 = 74$, so \$74.00. (\$41.85 adds 40 and 1.85, \$7.40 slips the decimal point, and \$76.00 rounds the fuel price up to \$1.90 per litre first — 1.90×40.) Answer C.
6	A	Average speed = distance $\div$ time: $135 \div 2.5 = 54$ km/hr. (137.5 km/hr adds 135 and 2.5, 337.5 km/hr multiplies them, and 540 km/hr slips the decimal point.) Answer A.
7	D	85 cents is \$0.85. Claim = allowance per kilometre $\times$ distance: $0.85 \times 22 = 18.70$, so \$18.70. (\$1.87 slips the decimal point, \$22.85 adds 22 and 0.85, and \$1 870.00 reads the cents as dollars — 85×22.) Answer D.
8	B	14 : 40 is past noon, so subtract 12 from the hour and keep the minutes: $14 - 12 = 2$. The time is 2:40 pm. (2:40 am is before noon, 4:40 pm subtracts 10 instead of 12, and 12:40 pm is just after noon.) Answer B.
9	B	Read the Water bar: its value is printed on top of the bar, 120. The canteen sold 120 cups of water. (95 cups is the Sports drink bar, and 110 cups and 125 cups misread the

Question	Answer	Working
10	C	height of the Water bar.) Answer B. Add the four bars together: $120 + 60 + 85 + 95 = 360$ cups sold altogether. (265 cups leaves out the sports drink, 300 cups leaves out the juice, and 350 cups is an addition slip.) Answer C.
11	A	Water 120 cups, juice 60 cups: $120 - 60 = 60$ more cups of water than juice. (2 cups divides instead — $120 \div 60$; 120 cups reads only the Water bar; and 180 cups adds the two bars together.) Answer A.
12	D	Profit on one cup = selling price – cost to make: $2.50 - 0.90 = 1.60$, so \$1.60. Profit on 60 cups: $1.60 \times 60 = 96$, so \$96.00. (\$54.00 is what the juice cost to make — 0.90×60 ; \$150.00 is the takings — 2.50×60 ; and \$204.00 adds the takings and the cost together.) Answer D.
13	C	The fencing goes all the way around, so find the perimeter: $P = 2 \times (8 + 5) = 2 \times 13 = 26$ m. (13 m is length plus width — only half the way around; 21 m misses one width — $8 + 5 + 8$; and 40 m is the area, 8×5 , not a length.) Answer C.
14	A	Area = $l \times w$: $8 \times 5 = 40$ m ² . (13 m ² adds the two sides instead of multiplying, 20 m ² halves the area, and 26 m ² is the perimeter — and in the wrong units.) Answer A.
15	B	Cost = rate $\times$ length: $12.50 \times 26 = 325$, so \$325.00. (\$162.50 buys only 13 m — the half-perimeter; \$500.00 multiplies the rate by the area — 12.50×40 ; and \$3 250.00 slips the decimal point.) Answer B.
16	D	Real life to plan goes down in size, so divide: $8 \div 2 = 4$ cm on the plan. (6 cm subtracts the 2, 10 cm adds it, and 16 cm multiplies — 8×2 — which is the plan-to-real direction, not this one.) Answer D.
17	C	The minute hand points at the 4, and each big number stands for 5 minutes: $4 \times 5 = 20$. The hour hand

Question	Answer	Working
18	D	is a little past the 8, so the hour is 8. Janet catches the bus in the morning, so the clock shows 8:20 am. (4:40 am swaps the two hands, 7:20 am reads the hour hand as the 7 it has not reached yet, and 8:04 am reads the 4 as 4 minutes.) Answer C. The bus departs at 8:20 am and the trip takes 50 minutes: $20 + 50 = 70$ minutes past 8, and 70 minutes is 1 hour and 10 minutes, so the bus arrives at 9:10 am. (7:30 am subtracts the trip instead of adding it, 8:50 am writes the 50 minutes straight into the minutes place, and 10:10 am carries an extra hour.) Answer D.
19	A	From 4:45 pm to 5:45 pm is 1 hour. From 5:45 pm to 6:05 pm is 20 minutes. The training runs for 1 h 20 min. (1 h 15 min drops the last 5 minutes; 2 h 20 min borrows an hour for the minutes but keeps $6 - 4 = 2$ hours; and 2 h 40 min swaps the subtraction around to stay positive — $45 - 5 = 40$.) Answer A.
20	B	Change = amount paid – cost: $10.00 - 2.30 = 7.70$, so \$7.70. (\$8.30 subtracts only the \$2 and keeps the 30 c, \$23.00 multiplies — 10×2.30 — and \$12.30 adds.) Answer B.
21	C	Kilograms to grams steps down to a smaller unit, so multiply by 1000: $1.5 \times 1000 = 1500$ g. (150 g multiplies by 100, 15 000 g multiplies by 10 000, and 15 g multiplies by 10.) Answer C.
22	A	$4.5 \text{ L} = 4500 \text{ mL}$. Full bowls = $4500 \div 250 = 18$ bowls. (1.8 bowls slips the decimal point, 45 bowls divides by 100, and 180 bowls reads 4.5 L as 45 000 mL.) Answer A.
23	D	Volume $= l \times w \times h = 20 \times 15 \times 10 = 3000 \text{ cm}^3$. (45 adds the three sides — $20 + 15 + 10$; 300 cm^3 forgets the height — 20×15; and 350 cm^3 adds first and multiplies after — $(20 + 15) \times 10$.) Answer D.

Question	Answer	Working
24	B	Volume in cm^3 first: $40 \times 30 \times 25 = 30\,000 \text{ cm}^3$. The bridge to litres: $1000 \text{ cm}^3 = 1 \text{ L}$, so $30\,000 \div 1000 = 30 \text{ L}$. (3 L divides by 10 000, 0.03 L divides by 1 000 000, and 30 000 L never crosses the bridge — it leaves the answer in cm^3 .) Answer B.
25	A	30 seconds is half a minute, so double the count to get a full minute: $34 \times 2 = 68$ beats per minute. (17 halves the count instead, 34 forgets to scale up to a full minute, and 64 adds the 30 seconds to the count.) Answer A.
26	C	Whole box = number of serves $\times$ kJ per serve: $5 \times 480 = 2400 \text{ kJ}$. (96 kJ divides instead — $480 \div 5$; 485 kJ adds — $480 + 5$; and 2880 kJ counts 6 serves — 6×480 .) Answer C.
27	B	$8 \times 250 = 2000 \text{ mL}$. mL to L steps up to a bigger unit, so divide by 1000: $2000 \div 1000 = 2 \text{ L}$. (8.25 L adds the two numbers, 20 L divides by 100, and 2000 L never converts — it leaves the answer in mL.) Answer B.
28	D	One day uses 3 doses of 5 mL: $3 \times 5 = 15 \text{ mL}$ per day. 6 full days use $6 \times 15 = 90 \text{ mL}$, which fits inside the 100 mL bottle, but 7 days would need $7 \times 15 = 105 \text{ mL}$ — more than the bottle holds. The bottle lasts 6 full days. (7 days rounds up past the end of the bottle, 15 is one day's amount in mL rather than a number of days, and 20 days forgets the 3 doses — $100 \div 5$.) Answer D.
29	C	The pass band runs from 118 cm to 122 cm, and both ends pass. 122 cm sits exactly on the top end of the band, so that plank passes. (117.5 cm is below the band, and 122.5 cm and 123 cm are above it.) Answer C.
30	A	In the ratio 1 : 2, the water is the 2, so 2 parts = 6 L and 1 part = $6 \div 2 = 3 \text{ L}$. Steve uses 3 L of plant food. (6 L reads the ratio as 1 : 1, 9 L is the whole mixture — $3 + 6$ —

Question	Answer	Working
31	D	and 12 L doubles the water — 6×2.) Answer A. The ratio 3 : 4 gives $3 + 4 = 7$ equal parts in all. One part: $700 \div 7 = 100$, so \$100. Steve takes 3 parts: $3 \times 100 = 300$, so \$300.00. (\$233.33 divides \$700 by Steve's 3 parts instead of the 7 parts; \$400.00 is the sister's share — 4 parts; and \$200.00 multiplies — 700×3.) Answer D.
32	B	The decrease is $50 - 40 = 10$ minutes. A percentage decrease compares the decrease with the original time: $\frac{10}{50} \times 100 = 20\%$. (10% reads the 10-minute drop as a percentage by itself; 25% divides by the new time — $\frac{10}{40} \times 100$; and 40% is just the new time.) Answer B.
33	A	Find 1 hour on the horizontal axis and read the marked point above it: it sits at 12 km. Cathy was 12 km from home. (6 km is half of the first rise, 18 km is the rise of the second ride — $30 - 12$ — and 30 km is the distance at the very end of the trip.) Answer A.
34	C	During a break the distance stays flat — Cathy is not moving further from home. The graph is flat between 1 hour and 1.5 hours after 9:00 am, which is 10:00 am to 10:30 am. (The other windows are parts of the ride, where the line slopes upwards.) Answer C.
35	D	After the break: distance travelled = $30 - 12 = 18$ km, and time = $2.5 - 1.5 = 1$ hour. Speed = $18 \div 1 = 18$ km/hr. (12 km/hr is the speed of the first ride — $12 \div 1$; 20 km/hr divides the whole distance by 1.5 hours; and 30 km/hr reads the distance as a speed.) Answer D.
36	B	For the whole trip the break counts, as the question says: distance 30 km, time 2.5 hours. Average speed = $30 \div 2.5 = 12$ km/hr. (15 km/hr uses only the 2 hours of riding and

Question	Answer	Working
		drops the break, 18 km/hr is the speed of the second ride only, and 75 km/hr multiplies — 30×2.5 .) Answer B.
37	D	Warm-up needed = target – current: $26 - 22.5 = 3.5$ °C. (3 °C rounds 22.5 up to 23 first, 4 °C rounds 22.5 down to 22 first, and 48.5 °C adds the two temperatures together.) Answer D.
38	A	Normal human body temperature is about 37 °C. (4 °C is the inside of a fridge, 20 °C is a comfortable room, and 100 °C is boiling water.) Answer A.
39	C	A 25 m pool lane is a long straight length. A trundle wheel rolls along the lane and counts the metres as it rolls — the quick and accurate choice for a long length. (A measuring jug measures the capacity of a liquid, a ruler is far too short for 25 m, and a thermometer measures temperature.) Answer C.
40	B	A doorway must let a tall adult walk through, so it is about 2 m high. (2 cm is about the width of a thumbnail, 20 cm is about the length of a ruler, and 20 m is taller than most houses.) Answer B.
41	A	GST is 10 % of the before-GST price: $\frac{10}{100} \times 220 = 22$, so \$22.00 of GST is added. (\$2.20 slips the decimal point, \$220.00 is the whole before-GST price, and \$242.00 is the price with the GST already added on.) Answer A.
42	D	One equal payment of the price: $360 \div 4 = 90$, so \$90.00. The booking fee is added to the first payment only: $90.00 + 15.00 = 105.00$, so the first payment is \$105.00. (\$90.00 forgets the fee, \$93.75 spreads the fee over all 4 payments — $(360 + 15) \div 4$ — and \$375.00 is the whole debt — $360 + 15$.) Answer D.
43	C	Interest for 1 year = 5 % of \$2 400: $\frac{5}{100} \times 2400 = 120$, so \$120.00.

Question	Answer	Working
		(\$12.00 slips the decimal point, \$480.00 divides by 5 — $2400 \div 5$ — instead of taking 5 %, and \$2 520.00 is the balance plus the interest.) Answer C.
44	B	The increase is $15 - 12 = 3$: the price rises by \$3. A percentage increase compares the increase with the original price: $\frac{3}{12} \times 100 = 25\%$. (3 % reads the \$3 rise as a percentage by itself, 20 % divides by the new price — $\frac{3}{15} \times 100$ — and 125 % is the new price as a percentage of the old.) Answer B.
45	D	Sales = number sold $\times$ price each, so the formula must multiply B2 by C2: $=B2 * C2$. ($=B2 + C2$ adds the two inputs, $=SUM(B2 : C2)$ also adds them, and $=2B * 2C$ is not valid spreadsheet typing — a cell name goes letter first, as in B2.) Answer D.
46	A	The \$40 design fee is paid once, whatever the job, and \$25 is charged for each hour of work, so the rule is $C = 40 + 25h$. ($C = 40h + 25$ swaps the two numbers and charges \$40 per hour; $C = 65h$ adds the two numbers and charges \$65 per hour; and $C = 40 + 25 + h$ adds the hours on instead of multiplying them by \$25.) Answer A.
47	C	Substitute $h = 6$ into $C = 40 + 25h$: $C = 40 + 25 \times 6 = 40 + 150 = 190$, so \$190.00. (\$150.00 forgets the design fee, \$240.00 multiplies the fee by the hours — 40×6 — and \$390.00 uses $C = 65h$ — 65×6.) Answer C.
48	B	A rectangular prism has 12 edges: 4 run one way, 4 run the second way and 4 run the third way, and $4 \times 3 = 12$. (4 counts one direction only, 6 counts the faces, and 8 counts the vertices.) Answer B.
49	D	A full turn is 360°, so a quarter turn is $360 \div 4 = 90^\circ$. (45° is an eighth of a turn, 180° is a half turn, and 360° is a full turn.) Answer D.

Question	Answer	Working
50	A	The pattern repeats every 4 shapes. $20 \div 4 = 5$ with a remainder of 0: the pattern completes 5 full times, so the 20th tile is the last shape of the repeat — a hexagon. (The square, the triangle and the circle are shapes 1, 2 and 3 of the repeat — they land on tile numbers that leave remainders of 1, 2 and 3.) Answer A.