

THT WORKSHEETS

Learn With the Solutions

UCAT

Quantitative Reasoning

Timed Practice Set

These solutions show both the calculation and the fastest reliable approach. In UCAT Quantitative Reasoning, an efficient method is often just as important as mathematical accuracy.

Questions 1–4: Clinic Appointments

The clinic data is:

General Practice: 48 appointments, 45 attended

Paediatrics: 36 appointments, 33 attended

Cardiology: 24 appointments, 21 attended

Physiotherapy: 30 appointments, 27 attended

1.

Understanding the Question

We need the total number of missed appointments across all four departments.

For each department:

Missed appointments = Appointments booked – Appointments attended

Calculate each department

General Practice:

$$48 - 45 = 3$$

Paediatrics:

THT.

$$36 - 33 = 3$$

Cardiology:

$$24 - 21 = 3$$

Physiotherapy:

$$30 - 27 = 3$$

Find the total

$$3 + 3 + 3 + 3 = 12$$

Final Answer: C. 12

UCAT Strategy

Scan the two columns before calculating. Every department has exactly three missed appointments, so the total can be found quickly using:

$$4 \times 3 = 12$$

2.

Understanding the Question

Cardiology had:

24 appointments booked

21 appointments attended

We need the percentage attended.

Formula

Attendance percentage:

$$\text{Attended} \div \text{Total appointments} \times 100$$

Substitute

$$21 \div 24 \times 100$$

Simplify the fraction:

$$21/24 = 7/8$$

THT.

Convert to a percentage:

$$7 \div 8 = 0.875$$

$$0.875 \times 100 = 87.5\%$$

Final Answer: C. 87.5%

Faster Method

Remember:

$$1/8 = 12.5\%$$

Therefore:

$$7/8 = 100\% - 12.5\%$$

$$= 87.5\%$$

Common Mistake

Do not divide 24 by 21. The number attended is the part, and the total appointments form the whole.

3.

Understanding the Question

We must compare the attendance rates, not merely the numbers attending.

Each department missed three appointments.

When the number missed is the same, the department with the largest total has the highest attendance rate because those three missed appointments form the smallest proportion of its bookings.

General Practice has the greatest number of appointments:

48

Therefore, its attendance rate is highest.

Verification

General Practice:

$$45 \div 48 = 93.75\%$$

Paediatrics:

THT.

$$33 \div 36 \approx 91.7\%$$

Cardiology:

$$21 \div 24 = 87.5\%$$

Physiotherapy:

$$27 \div 30 = 90\%$$

The greatest rate is 93.75%.

Final Answer: A. General Practice

UCAT Strategy

Do not calculate every percentage unless necessary. Recognising that every department missed three appointments allows a faster comparison.

4.

Understanding the Question

First find the current total attendance.

Then add two attended appointments for each of the four departments.

Current attendance

$$45 + 33 + 21 + 27$$

Pair convenient values:

$$45 + 33 = 78$$

$$21 + 27 = 48$$

$$78 + 48 = 126$$

Increase in attendance

Four departments each gain two:

$$4 \times 2 = 8$$

New total

$$126 + 8 = 134$$

Final Answer: D. 134

Common Mistake

Do not add only 2 to the overall total. The increase occurs separately in all four departments.

Questions 5–8: Pharmacy Purchases

The pharmacy prices are:

Pain relief tablets = \$8.40

Vitamin C = \$14.80

Antiseptic cream = \$6.75

Thermometer = \$18.50

5.

Understanding the Question

The customer buys one of every listed item.

Add all four prices.

Calculate the total

$$\$8.40 + \$14.80 = \$23.20$$

$$\$6.75 + \$18.50 = \$25.25$$

Now add the two subtotals:

$$\$23.20 + \$25.25 = \$48.45$$

Final Answer: \$48.45

UCAT Strategy

Pair the values into convenient subtotals rather than entering four separate additions into the calculator.

THT.

6.

Understanding the Question

Vitamin C costs \$14.80 and is reduced by 25%.

A 25% discount means the customer pays 75% of the original price.

Efficient method

$$75\% = 0.75$$

New price:

$$14.80 \times 0.75$$

$$= 11.10$$

Final Answer: \$11.10

Alternative Method

Find the discount first:

$$25\% \text{ of } \$14.80$$

$$= 14.80 \div 4$$

$$= \$3.70$$

Subtract:

$$\$14.80 - \$3.70 = \$11.10$$

UCAT Strategy

Recognise common fractions:

$$25\% = 1/4$$

Dividing by 4 may be faster than using the calculator.

7.

Understanding the Question

The customer has \$42 and must have exactly \$1.95 remaining.

THT.

Instead of checking every option immediately, first calculate the required purchase total.

Find the required spending

$$\$42.00 - \$1.95 = \$40.05$$

The correct option must cost exactly \$40.05.

Check Option A

One thermometer:

$$\$18.50$$

One Vitamin C:

$$\$14.80$$

One antiseptic cream:

$$\$6.75$$

Total:

$$\$18.50 + \$14.80 + \$6.75$$

$$= \$33.30 + \$6.75$$

$$= \$40.05$$

Money remaining:

$$\$42.00 - \$40.05 = \$1.95$$

Option A satisfies the condition.

Check the other options

Option B:

$$5 \times \$8.40 = \$42.00$$

$$\text{Remaining} = \$0$$

Option C:

$$2 \times \$18.50 + \$6.75$$

$$= \$37.00 + \$6.75$$

$$= \$43.75$$

THT.

This exceeds the available money.

Option D:

$$3 \times \$14.80 = \$44.40$$

This also exceeds the available money.

Final Answer: A

UCAT Strategy

Work backwards from the required remainder:

Available money – Required remainder = Required spending

This is faster than calculating the remainder for every option.

8.

Understanding the Question

The profit is \$2.20 for each tube.

The pharmacy sells 80 tubes.

Calculate the profit

$$80 \times \$2.20$$

Ignore the decimal temporarily:

$$8 \times 22 = 176$$

Because 80×2.20 has the same value:

$$80 \times 2.20 = 176$$

Final Answer: \$176

Quick Check

Profit is slightly more than \$2 per tube.

$$80 \times \$2 = \$160$$

Therefore, \$176 is reasonable.

Questions 9–12: Laboratory Samples

The laboratory processed:

9 am: 48 samples

10 am: 56 samples

11 am: 63 samples

12 pm: 58 samples

9.

Understanding the Question

Add the samples processed during all four hours.

Calculate

$$48 + 56 = 104$$

$$63 + 58 = 121$$

$$104 + 121 = 225$$

Final Answer: 225 samples

UCAT Strategy

Pairing the values reduces the chance of losing track during a long addition.

10.

Understanding the Question

We need the largest increase between consecutive hours.

Compare each change

9 am to 10 am:

$$56 - 48 = 8$$

10 am to 11 am:

$$63 - 56 = 7$$

THT.

11 am to 12 pm:

$$58 - 63 = -5$$

The final change is a decrease, not an increase.

The largest increase is 8 samples.

Final Answer: A. 9 am to 10 am

Common Mistake

Do not choose the hour with the highest sample total. The question asks for the greatest increase between consecutive hours.

11.

Understanding the Question

At 11 am, 63 samples were processed.

Each sample requires 3 minutes.

Calculate the total time

$$63 \times 3$$

$$= 60 \times 3 + 3 \times 3$$

$$= 180 + 9$$

$$= 189$$

Final Answer: 189 minutes

Interpretation

This calculation represents the total processing time across all samples. It does not necessarily mean the laboratory took 189 clock minutes if several samples were processed simultaneously.

12.

Understanding the Question

At 12 pm, 58 samples were processed.

THT.

Eight per cent required retesting.

Calculate 8%

$$58 \times 0.08$$

$$= 4.64$$

The question asks for the nearest whole number.

4.64 rounds up to 5.

Final Answer: 5 samples

UCAT Strategy

Estimate first:

$$10\% \text{ of } 58 = 5.8$$

Eight per cent must be slightly less than 5.8, so an answer close to 5 is sensible.

Common Mistake

Do not leave the answer as 4.64 samples. The number of samples must be a whole number, and the question specifically asks for rounding.

Questions 13–16: Disposable Gloves

The available boxes are:

50 gloves for \$12

100 gloves for \$21

200 gloves for \$39

13.

Understanding the Question

The lowest box price is not necessarily the best value.

We must calculate the cost per glove.

THT.

Box of 50

$$\$12 \div 50$$

$$= \$0.24 \text{ per glove}$$

Box of 100

$$\$21 \div 100$$

$$= \$0.21 \text{ per glove}$$

Box of 200

$$\$39 \div 200$$

$$= \$0.195 \text{ per glove}$$

This is 19.5 cents per glove.

The lowest unit cost is the 200-glove box.

Final Answer: C. 200

UCAT Strategy

When comparing differently sized products, calculate the unit cost rather than comparing the total prices.

14.

Understanding the Question

The hospital needs at least 500 gloves at the lowest possible cost.

Because the 200-glove box has the lowest unit cost, begin with as many of those boxes as practical.

Efficient combination

Two boxes of 200 provide:

$$2 \times 200 = 400 \text{ gloves}$$

One box of 100 brings the total to:

$$400 + 100 = 500 \text{ gloves}$$

Cost:

THT.

$$2 \times \$39 + \$21$$

$$= \$78 + \$21$$

$$= \$99$$

Compare with other simple combinations

Five boxes of 100:

$$5 \times \$21 = \$105$$

Ten boxes of 50:

$$10 \times \$12 = \$120$$

Three boxes of 200:

$$3 \times \$39 = \$117$$

Two boxes of 200 and two boxes of 50:

$$\$78 + \$24 = \$102$$

The \$99 combination is the cheapest.

Final Answer: \$99

UCAT Strategy

Start with the lowest unit-cost box, then adjust the combination to meet the required quantity without buying unnecessary excess.

15.

Understanding the Question

The 200-glove box originally costs \$39.

All prices increase by 10%.

Calculate the increase

10% of \$39:

$$39 \times 0.10 = \$3.90$$

THT.

Add the increase

$$\$39.00 + \$3.90 = \$42.90$$

Final Answer: \$42.90

Faster Method

A 10% increase means multiplying by 1.10:

$$39 \times 1.10 = 42.90$$

16.

Understanding the Question

The hospital buys six boxes of 100 gloves.

Each box costs \$21.

Calculate the total cost

$$6 \times \$21$$

$$= 6 \times 20 + 6 \times 1$$

$$= 120 + 6$$

$$= 126$$

Final Answer: \$126

Questions 17–20: Waiting Times

The average waiting times were:

Monday: 22 minutes

Tuesday: 18 minutes

Wednesday: 26 minutes

Thursday: 20 minutes

Friday: 24 minutes

THT.

17.

Understanding the Question

The mean is found by adding all five waiting times and dividing by five.

Add the times

$$22 + 18 + 26 + 20 + 24$$

Pair convenient values:

$$22 + 18 = 40$$

$$26 + 24 = 50$$

$$40 + 50 + 20 = 110$$

Divide by the number of days

$$110 \div 5 = 22$$

Final Answer: 22 minutes

Quick Check

The values range from 18 to 26 minutes. A mean of 22 lies near the centre of this range.

18.

Understanding the Question

Tuesday's waiting time was 18 minutes.

We need the day whose waiting time was one-third longer than Tuesday's.

Find one-third of 18

$$18 \div 3 = 6$$

Add the increase

$$18 + 6 = 24$$

Find 24 minutes in the table.

Friday had a waiting time of 24 minutes.

THT.

Final Answer: D. Friday

Faster Method

“One-third longer” means multiplying by:

$$1 + 1/3 = 4/3$$

$$18 \times 4/3$$

$$= 6 \times 4$$

$$= 24$$

Common Mistake

One-third longer does not mean one-third of the original value. The increase must be added to the original waiting time.

19.

Understanding the Question

Every daily waiting time is reduced by 5 minutes.

When every value in a data set changes by the same amount, the mean changes by that amount.

Original mean:

22 minutes

Reduction:

5 minutes

New mean:

$$22 - 5 = 17 \text{ minutes}$$

Final Answer: 17 minutes

UCAT Strategy

There is no need to subtract 5 from all five values and recalculate the mean. Apply the same reduction directly to the original mean.

20.

Understanding the Question

The manager claims:

“Reducing the longest waiting day by 10 minutes will always reduce the weekly mean by 2 minutes.”

The data covers five days.

Changing one value by 10 minutes changes the total by 10 minutes.

Because the mean is calculated across five values, the change in the mean is:

$$10 \div 5 = 2 \text{ minutes}$$

Verify using the data

Original total:

110 minutes

Original mean:

$$110 \div 5 = 22 \text{ minutes}$$

The longest waiting time is Wednesday:

26 minutes

Reduce it by 10:

$$26 - 10 = 16 \text{ minutes}$$

New total:

$$110 - 10 = 100 \text{ minutes}$$

New mean:

$$100 \div 5 = 20 \text{ minutes}$$

Reduction in mean:

$$22 - 20 = 2 \text{ minutes}$$

Therefore, for this five-day weekly data set, the manager’s statement is correct.

Final Answer: A. True

Key Idea

Changing one data value changes the mean by:

Change in the value $\div$ Number of values

Here:

$$10 \div 5 = 2$$

Precision Note

The statement is true because the weekly table contains exactly five days. With a different number of data values, the change in the mean would be different.

Quick Answer Check

1. C. 12
2. C. 87.5%
3. A. General Practice
4. D. 134
5. \$48.45
6. \$11.10
7. A
8. \$176
9. 225 samples
- 10.A. 9 am to 10 am
- 11.189 minutes
- 12.5 samples
- 13.C. 200
- 14.\$99
- 15.\$42.90
- 16.\$126
- 17.22 minutes
- 18.D. Friday
- 19.17 minutes
- 20.A. True