LITERACY AND NUMERACY TEST FOR INITIAL TEACHER EDUCATION STUDENTS

# Numeracy

## Practice Questions July 2017

ACER

# NUMERACY PRACTICE QUESTIONS

Answers to the numeracy practice questions are provided on page 24.

These practice questions are presented in paper format. The actual test is taken online.

There are 30 practice questions in this paper. The actual numeracy test has 65 questions.

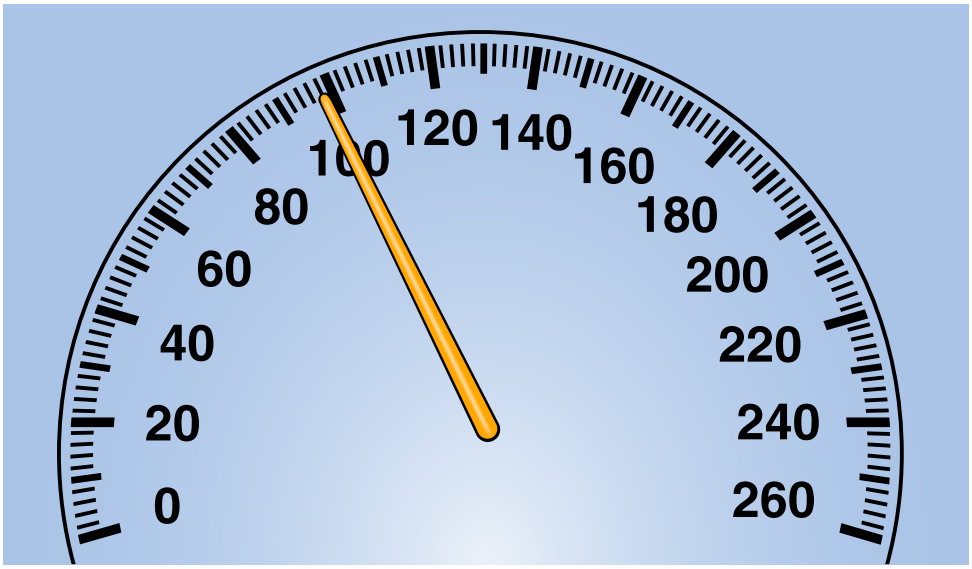
## SECTION 1: CALCULATOR AVAILABLE

For the actual test, the basic online calculator provided within the test is to be used. Scrap paper for written calculations is also provided. The online sample test, available on registration for the actual test, provides access to the online calculator.

There are 24 practice questions in section 1. The actual test has 52 questions in section 1.

## CAR SPEEDO

This speedometer shows the speed at which a car is travelling.




### Question 1

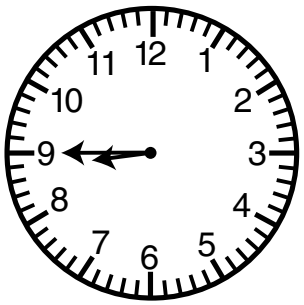
The speed limit is 110 km/h.

What is the difference between the speed limit and the speed shown?

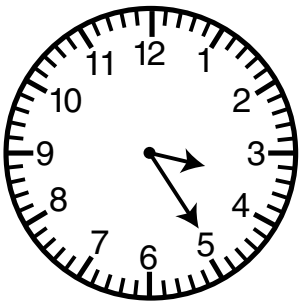
**A** 8 km/h
**B** 12 km/h
**C** 15 km/h
**D** 22 km/h

## CLASS TIME

**Start of school day**




**End of school day**




### Question 2

How long is the school day?

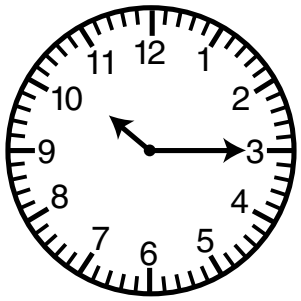
**A** 5 hours and 20 minutes
**B** 5 hours and 40 minutes
**C** 6 hours and 20 minutes
**D** 6 hours and 40 minutes

## Question 3

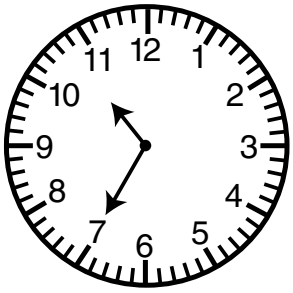
Morning recess begins 1 hour and 50 minutes after the start of the school day.

Which clock shows when morning recess begins?

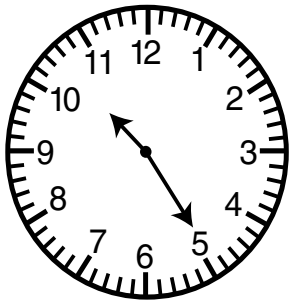
**A.**



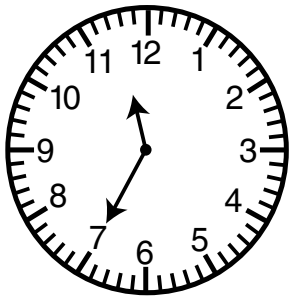

**C.**




**B.**




**D.**



## NUTRITION INFORMATION

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).

### Question 4

How much energy (in kJ) is in 2 slices of bread?

_____ kJ

### Question 5

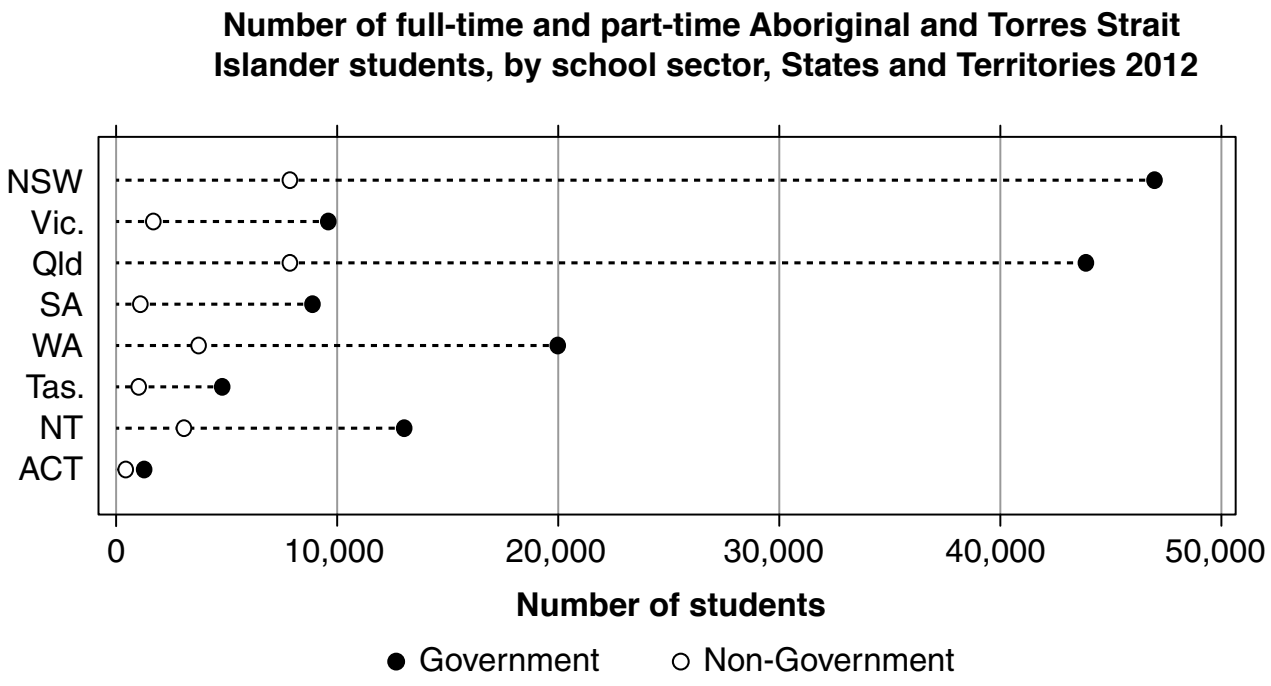
Based on the information at the bottom of the table, how many kilojoules (kJ) are equal to 1 kilocalorie (kcal)?

_____ kJ

## ABORIGINAL AND TORRES STRAIT ISLANDER STUDENTS

This graph shows the number of Aboriginal and Torres Strait Islander students by school sector in each State and Territory in 2012.

For example, in WA there were approximately 20,000 Aboriginal and Torres Strait Islander students in Government schools.




Based on Australian Bureau of Statistics data

### Question 6

Which State or Territory had approximately 9000 Aboriginal and Torres Strait Islander students in Government schools and 1000 Aboriginal and Torres Strait Islander students in non-Government schools in 2012?

**A** NSW
**B** SA
**C** Tas.
**D** ACT

## ABORIGINAL AND TORRES STRAIT ISLANDER STUDENTS (CONTINUED)

### Question 7

In which State or Territory was the proportion of Aboriginal and Torres Strait Islander students in the non-Government school sector greatest?

**A** NSW
**B** SA
**C** Tas.
**D** ACT

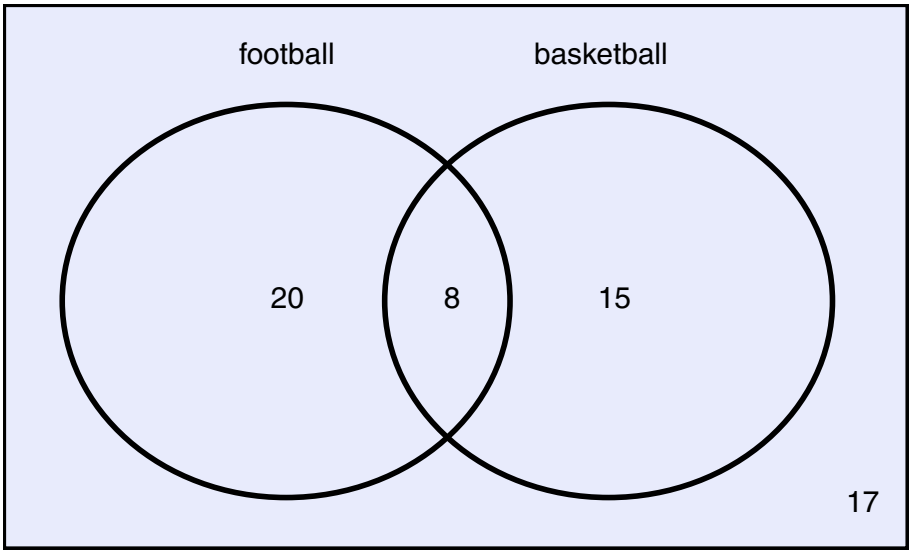
## BALL SPORTS

Sixty students were asked the following question:

Which of these sports do you play on a regular basis?

**A** football
**B** basketball
**C** both
**D** neither

The results are displayed in this Venn diagram.



## BALL SPORTS (CONTINUED)

### Question 8

How many students reported that they do not play basketball?

_____

### Question 9

A teacher wants to represent the information in the Venn diagram as a two-way table.

| | **Play football** | **Do not play football** |
|---|---|---|
| Play basketball | | ? |
| Do not play basketball | | |

What number should be entered into the shaded cell?

_____

## PART-TIME

Sue has a part-time teaching load.

In a 5-day week she teaches only three days.

### Question 10

What is Sue's teaching load expressed as a decimal?

_____

## SIMPLE INTEREST

A rule for calculating simple interest on a loan is

$$I = \frac{PRT}{100}$$

where

*I* is the simple interest in dollars,

*P* is the principal borrowed in dollars,

*R* is the annual rate of interest (e.g. for 7%, R = 7),

*T* is the time period in years.

### Question 11

What is the simple interest on a principal of $1000 at 5% annual interest rate over 3 years?

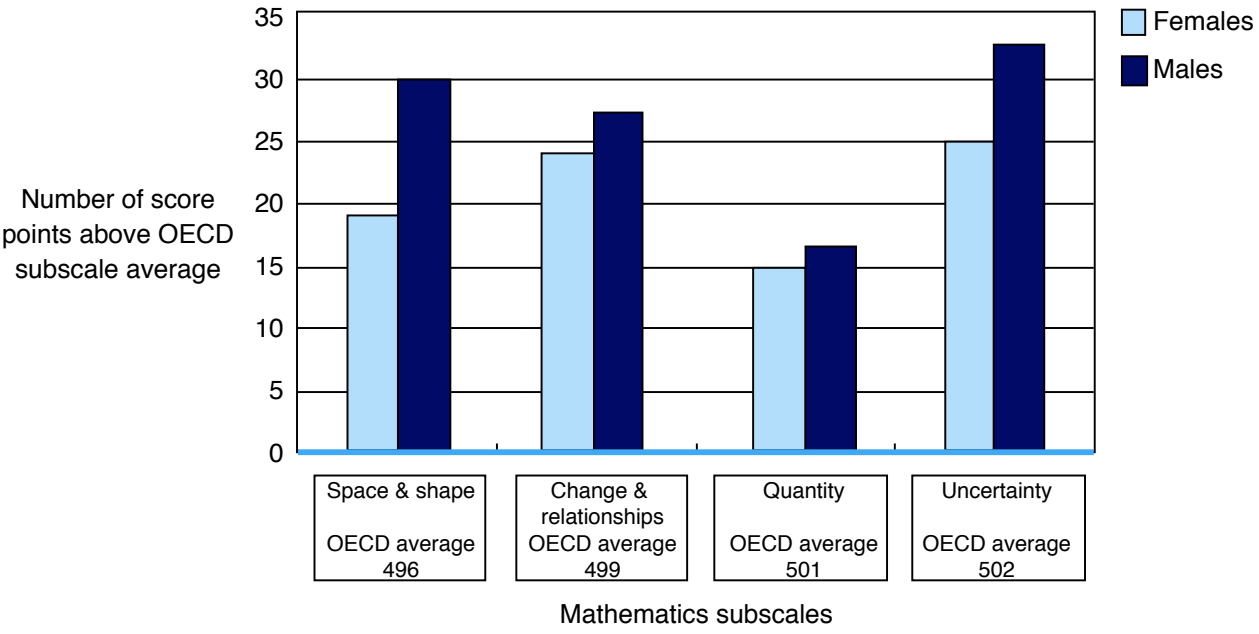
$ _____

## PISA GRAPH

The Programme for International Student Assessment (PISA) measures student achievement in many countries every three years.

This graph compares the achievement of Australian female students and Australian male students in each of the four PISA mathematics subscales.

**PISA 2009 Mathematical Literacy subscale achievement comparison with OECD average score**




Source: *PISA 2009 Thematic report*, ACER, 2013

### Question 12

Below are some statements about the graph.

Select 'True' or 'False' for each statement.

| Statement | True | False |
|---|---|---|
| The score for female students in Australia in the Quantity subscale was 516 score points. | ○ | ○ |
| For Australian students, the largest gender difference in score points was in the Uncertainty subscale. | ○ | ○ |

## SAVING MONEY

Kerry has a part-time job.

She earns $225 a week.

Kerry saves half of the money she earns each week.

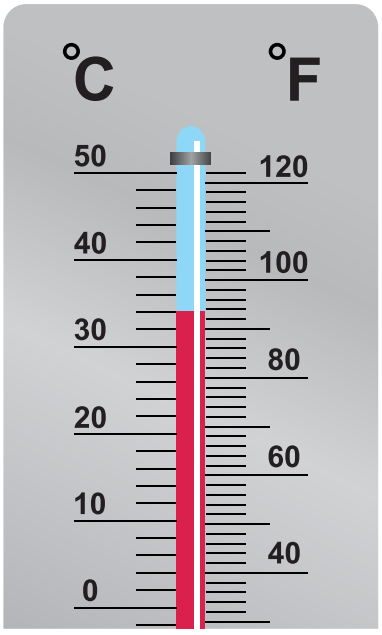
### Question 13

Which of these equations could be used to calculate how much money Kerry saves from the money she earns?

**A** savings = 225 × 2 × number of weeks
**B** savings = 225 × 0.5 × number of weeks
**C** savings = 225 ÷ (0.5 × number of weeks)
**D** savings = 225 – (0.5 × number of weeks)

## READING THERMOMETER

A school's extreme-heat policy is implemented when the temperature exceeds 36 °C.




### Question 14

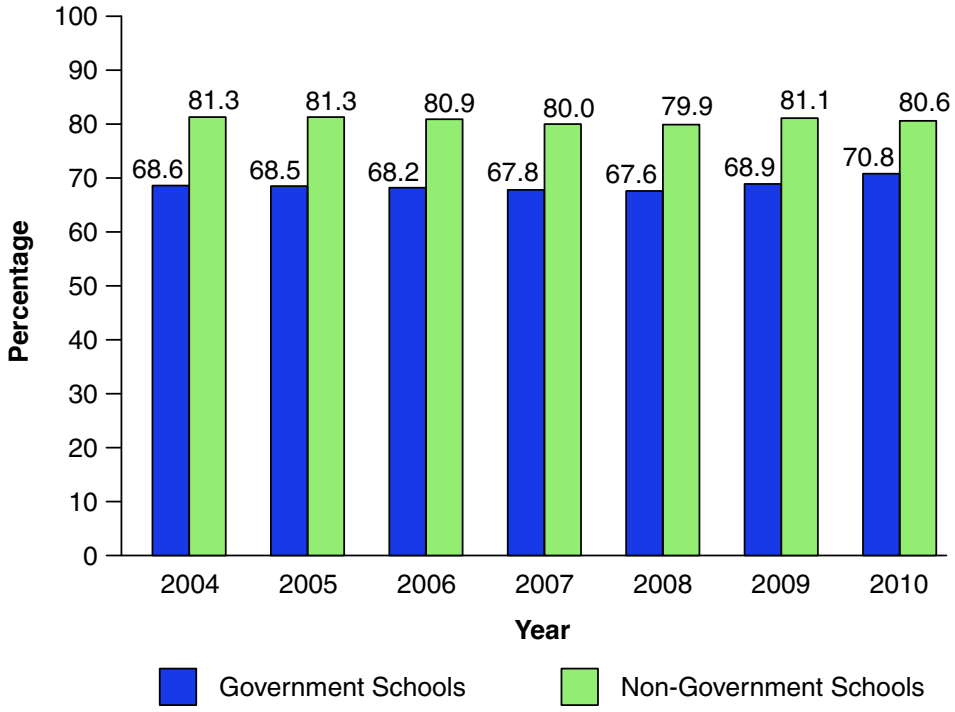
What is the temperature shown on the thermometer in degrees Celsius to the nearest degree?

_____ °C

## RETENTION RATE

This graph shows the retention rates from Year 10 to Year 12 for full-time students in NSW from 2004 to 2010.

**Retention rates from Year 10 to Year 12 for full-time students in NSW**




Source: NSW Dept Education and Training, *Annual Report*, 2010

### Question 15

Below are some statements about the graph.

Select 'True' or 'False' for each statement.

| Statement | True | False |
|---|---|---|
| Non-government schools had a higher retention rate than government schools in each of the seven years. | ○ | ○ |
| The highest retention rate for both non-government and government schools was achieved in 2010. | ○ | ○ |

## AUGUSTUS

The first Roman Emperor was Augustus.

He reigned across two eras: from Before the Common Era (BCE) into the Common Era (CE).

### Question 16

The period of Augustus' reign was from January in the year 27 BCE to August in the year 14 CE.

The year 1BCE was followed by the year 1CE.

The number of years Augustus reigned is closest to

_____ years.

## COPYING FEES

This table shows photocopying and laminating costs.

| Photocopying/Laminating | Size | Cost |
|---|---|---|
| Photocopying - Black and White | A4 | 10c per side |
| Photocopying - Colour | A4 | 88c per side |
| Laminating | A4 | $1.55 per sheet |
| | A3 | $2.45 per sheet |

### Question 17

Tanya is preparing classroom materials.

She needs to

- photocopy 24 single-sided A4 pages in black and white
- laminate one A4 sheet
- laminate two A3 sheets.

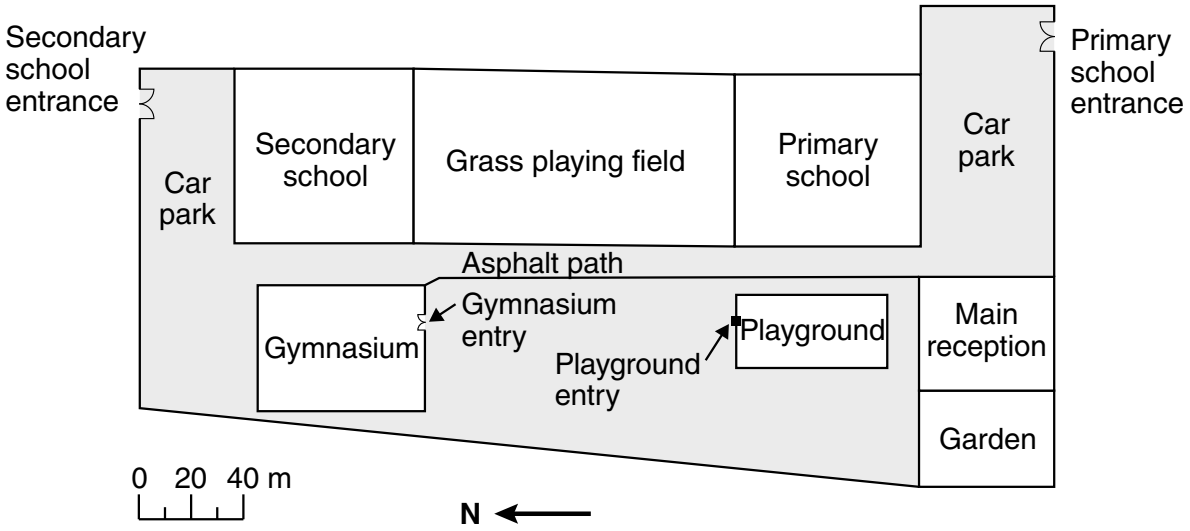
What is the total cost?

$ _____

## SCHOOL PLAN

This is a plan of an F-12 school.

The scale and the north direction are indicated at the bottom of the plan.




### Question 18

Below are some statements about the plan.

Select 'True' or 'False' for each statement.

| Statement | True | False |
|---|---|---|
| The distance between the gymnasium entry and the playground entry is between 90 metres and 130 metres. | ○ | ○ |
| When walking from the primary school to the secondary school along the asphalt path, the grass playing field is on the right. | ○ | ○ |
| The garden is to the east of main reception. | ○ | ○ |

## CHANCE OF RAIN

A school sports day is scheduled for Friday.

The Weather Bureau forecasts a 20% chance of rain on Friday.

### Question 19

What is the chance that it will **not** rain on the school sports day?

**A** $\frac{1}{5}$

**B** $\frac{4}{5}$

**C** $\frac{2}{8}$

**D** $\frac{1}{80}$

**E** $\frac{5}{100}$

## SPREADSHEET FORMULA

Ms Bell uses a spreadsheet to record her students' scores for three quizzes.

The maximum possible score for each quiz is 20.

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | | Quiz 1 | Quiz 2 | Quiz 3 | Average | Percentage |
| 2 | Trixie | 13 | 14 | 15 | 14 | |
| 3 | Suhaan | 20 | 20 | 17 | 19 | |
| 4 | Simon | 19 | 17 | 15 | 17 | |
| 5 | Shelley | 18 | 18 | 18 | 18 | |
| 6 | Trang | 11 | 15 | 13 | 13 | |
| 7 | Kent | 14 | 17 | 17 | 16 | |
| 8 | Thea | 14 | 16 | 12 | 14 | |
| 9 | Georgia | 20 | 18 | 19 | 19 | |
| 10 | Tim | 16 | 15 | 14 | 15 | |
| 11 | | | | | | |

**About spreadsheets ...**

Each cell is referred to by the column letter and row number.
For example 'Trixie' is in cell A2.

* stands for multiplication
/ stands for division

### Question 20

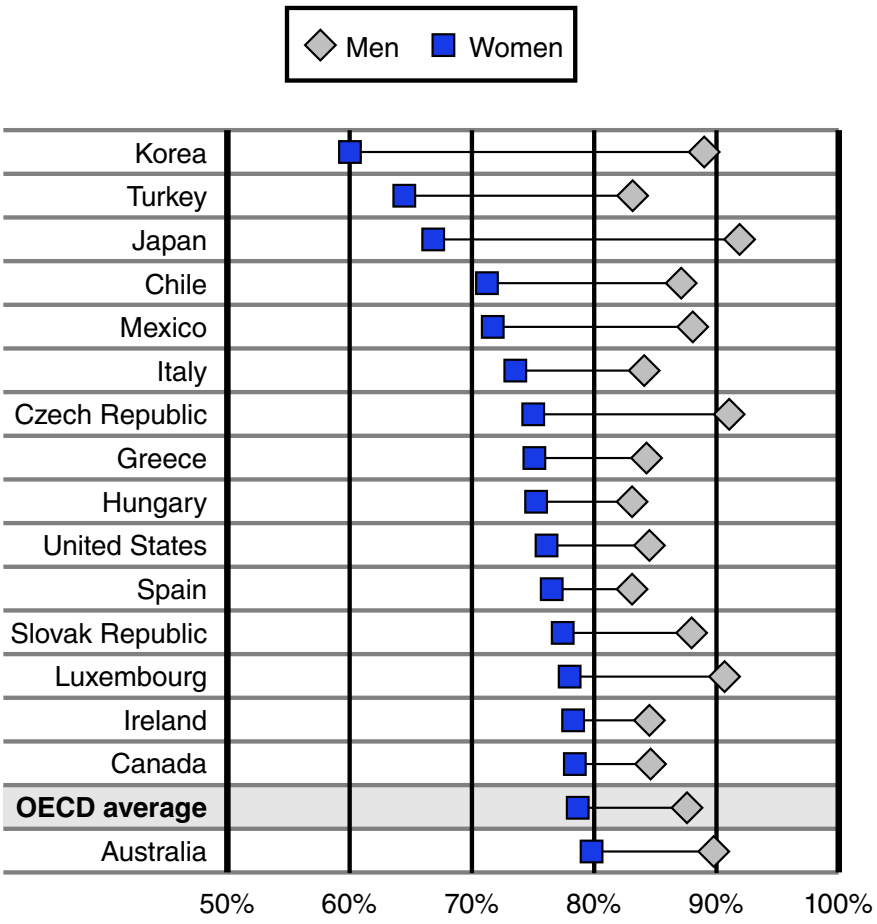
Which of these formulae could Ms Bell have used to calculate the average (mean) quiz score in cell E2 for Trixie?

**A** =B2+C2+D2/3
**B** =(B2+C2+D2)/3
**C** =(B2+C2+D2/3)
**D** =((B2+C2+D2/3))

## EDUCATION AND EMPLOYMENT

This graph was adapted from the OECD report, Education at a Glance, 2012.

**Percentage employment rate of 25–64 year olds with tertiary education, by gender (2010)**




Source: *Education at a Glance* 2012, OECD indicators

### Question 21

How has the employment rate been used to order this graph from top to bottom?

**A** by men in ascending order
**B** by men in descending order
**C** by women in ascending order
**D** by women in descending order

## EDUCATION AND EMPLOYMENT (CONTINUED)

### Question 22

Below are some statements about the graph.

Select 'True' or 'False' for each statement.

| Statement | True | False |
|---|---|---|
| The employment rate for men with tertiary education in the United States in 2010 was less than 80%. | ○ | ○ |
| In 2010, Turkey had the largest difference in the employment rate between men and women with tertiary education. | ○ | ○ |
| In 2010, Australia had a higher rate of employment than the OECD average for both men and women with tertiary education. | ○ | ○ |

## PARENT-TEACHER INTERVIEWS

A teacher is setting up a timetable for her parent-teacher interviews.

The time allowed for each interview is 15 minutes.

The time allowed for each session of consecutive interviews is 2½ hours.

The teacher needs to see the parents of 53 students.

### Question 23

What is the minimum number of sessions that the teacher will need to be available for?

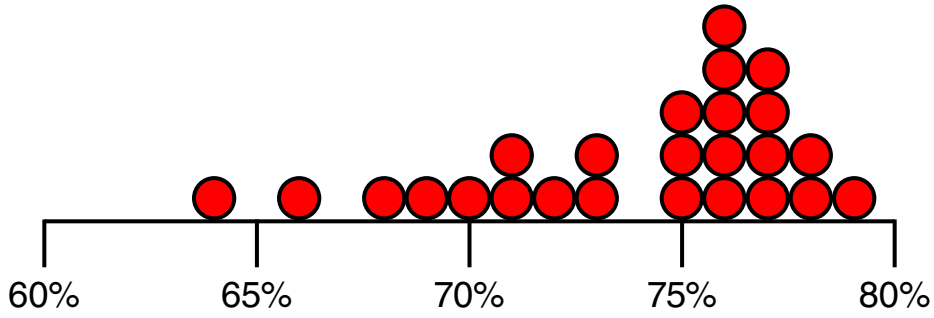
_____

## SKEWED DATA

A teacher gives an assessment to the 25 students in her class.

This graph shows a plot of the students' scores.

The mean of the scores is 73.8%.




### Question 24

Below are some statements about the graph.

Select 'True' or 'False' for each statement.

| Statement | True | False |
|---|---|---|
| More than half the class have scores above 75%. | ○ | ○ |
| The mean score would be higher if the highest score and lowest score were both omitted. | ○ | ○ |

You have completed Section 1.
In the actual test, once you move to Section 2 you are unable to return to Section 1.

## SECTION 2: CALCULATOR NOT AVAILABLE

There are 6 practice questions in section 2. The actual test has 13 questions in section 2.

### SPRINT FINAL

The table shows the results of a Girls' Under-14 100-metre sprint final at a sports day.

| **Lane number** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
|---|---|---|---|---|---|---|---|---|
| **Finish time (seconds)** | 14.92 | 14.85 | 14.71 | 14.64 | 14.36 | 14.16 | 14.10 | 14.76 |

### Question 25

Below are some statements about the results.

Select 'True' or 'False' for each statement.

| **Statement** | **True** | **False** |
|---|---|---|
| The winner of the race ran in Lane 1. | ○ | ○ |
| The competitor in Lane 3 was faster than the competitor in Lane 8. | ○ | ○ |

### Question 26

How were the times recorded?

**A** to the nearest tenth of a second
**B** to the nearest hundredth of a second
**C** to the nearest thousandth of a second

## BUYING COFFEE

Tom buys 3 coffees for $3.50 each.

He pays with a $20 note.

### Question 27

How much change should Tom receive?

$ _____

## TOMATO SAUCE

The school canteen orders tomato sauce in 4-litre containers.

The sauce is then poured into smaller 500-millilitre bottles.

### Question 28

How many 500-millilitre bottles can be filled from each 4-litre container?

_____

## APPLYING FOR COURSES

At a secondary school:

- one-half of the Year 12 students apply for university courses
- one-third of the Year 12 students apply for TAFE courses
- no Year 12 students apply for both types of courses

### Question 29

What fraction of the Year 12 students do not apply for either a university course or a TAFE course?

**A** $\frac{1}{5}$

**B** $\frac{1}{6}$

**C** $\frac{3}{5}$

**D** $\frac{4}{6}$

## POPULATION INCREASE OF AUSTRALIA

According to the Australian Bureau of Statistics, in June 2010:

- the population of Australia was 22.3 million people
- the number of people living in capital cities was 14.3 million

### Question 30

Approximately what percentage of the Australian population lived in Australian capital cities in 2010?

**A** 15% to 20%
**B** 50% to 55%
**C** 60% to 65%
**D** 70% to 75%

End of numeracy practice questions.
Answers on next page.

## Answers

| Section 1: Calculator available | |
|---|---|
| Question 1 | B |
| Question 2 | D |
| Question 3 | C |
| Question 4 | 866 or 866.8 or 867 |
| Question 5 | 4.2 |
| Question 6 | B |
| Question 7 | D |
| Question 8 | 37 |
| Question 9 | 15 |
| Question 10 | 0.6 |
| Question 11 | 150 |
| Question 12 | T, F |
| Question 13 | B |
| Question 14 | 34 |
| Question 15 | T, F |
| Question 16 | 41 |
| Question 17 | 8.85 |
| Question 18 | T, T, F |
| Question 19 | B |
| Question 20 | B |
| Question 21 | C |
| Question 22 | F, F, T |
| Question 23 | 6 |
| Question 24 | F, T |

| Section 2: Calculator not available | |
|---|---|
| Question 25 | F, T |
| Question 26 | B |
| Question 27 | 9.50 or 9.5 |
| Question 28 | 8 |
| Question 29 | B |
| Question 30 | C |

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