LITERACY AND NUMERACY TEST FOR INITIAL TEACHER EDUCATION STUDENTS

Retired test questions

Numeracy

2019

ACER

This set of questions has been retired from the pool developed for the numeracy component of the Literacy and Numeracy Test for Initial Teacher Education students. The questions have been selected to indicate the range of question types, content and difficulty that can be encountered in the actual test.

Candidates are advised that the set of questions is a guide only and that they should also take advantage of the wider set of practice materials available at
https://teacheredtest.acer.edu.au/prepare/practice-material

Contents

Section 1: Calculator Available

You may use your own basic calculator for this section of the practice test. For the actual online test, you are not permitted to use your own calculator, a basic online calculator is provided. More information about the online calculator can be found at https://teacheredtest.acer.edu.au/prepare/test-taking-strategy

Staff Ratio

This graph shows the average number of students per teacher in the Australian education system in 2013.

Average number of students per teacher by school sector in Australia, 2013
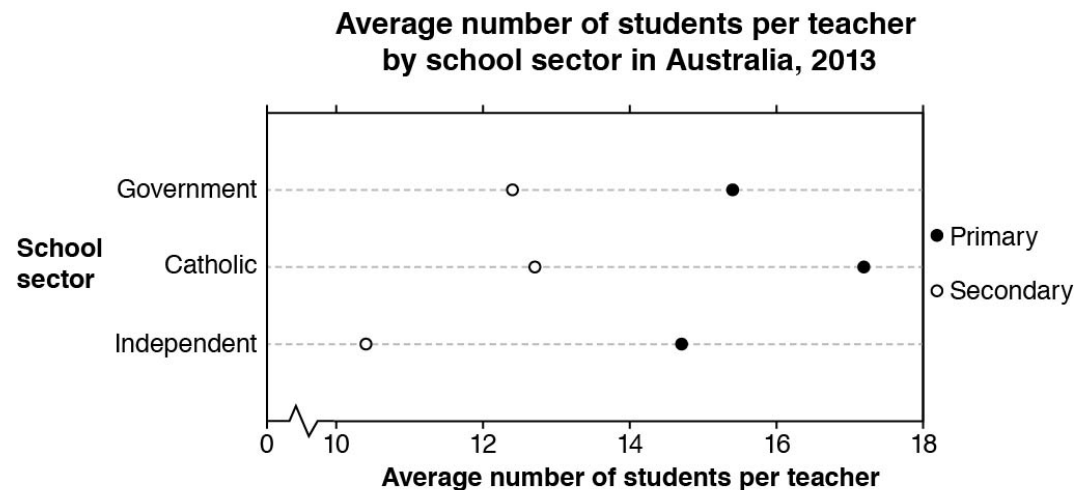
Source: Australian Bureau of Statistics

1.

Below are some statements about the graph.

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

Statement	True	False
The number of students per teacher in independent secondary schools is between 10 and 11.	T	F
For each sector, primary schools have more than twice the number of students per teacher compared to secondary schools.	T	F
In general, Catholic schools have more students per teacher than government schools.	T	F

Staff Meetings

At a school, staff meetings are held fortnightly (every **two** weeks).

2.

Term 2 is 11 weeks long.

The first day of the term is a Monday.

The first staff meeting is held on the **first Tuesday** of the term.

What is the maximum number of fortnightly staff meetings that can be held during Term 2?

3.

If a meeting was held on 28 May, what is the date of the next meeting?

| | June
|---|

Scale Drawings

Simone created a scale drawing of a building.

She used the scale 1**:**40.

The building is 8 metres tall.

4.

How many centimetres tall is the scale drawing of the building?

| | cm
|---|

Ticket Sales

A school concert is held at a venue that has 670 seats.

The concert is performed twice.

The concert is sold out for both performances.

Tickets cost $12 each. There are no concessions or special rates.

5.

What is the total amount of money made from ticket sales?

$ [   ]

Conference Costs

This table shows the registration costs for a conference.

| Conference costs		
	Early Bird*	**Full Price**
Member	$250	$265
Non-member	$280	$295
Student	$150	$150
	*Early bird rates until 12 August	

6.
What percentage is the student cost of the early-bird-member cost?

[   ] %

Educational Expectations

This graph shows information about the future education levels expected by parents for their children aged 8–9 years in different areas of Australia in 2008.

Parents' expectation of children's future education level, by gender and geographic remoteness
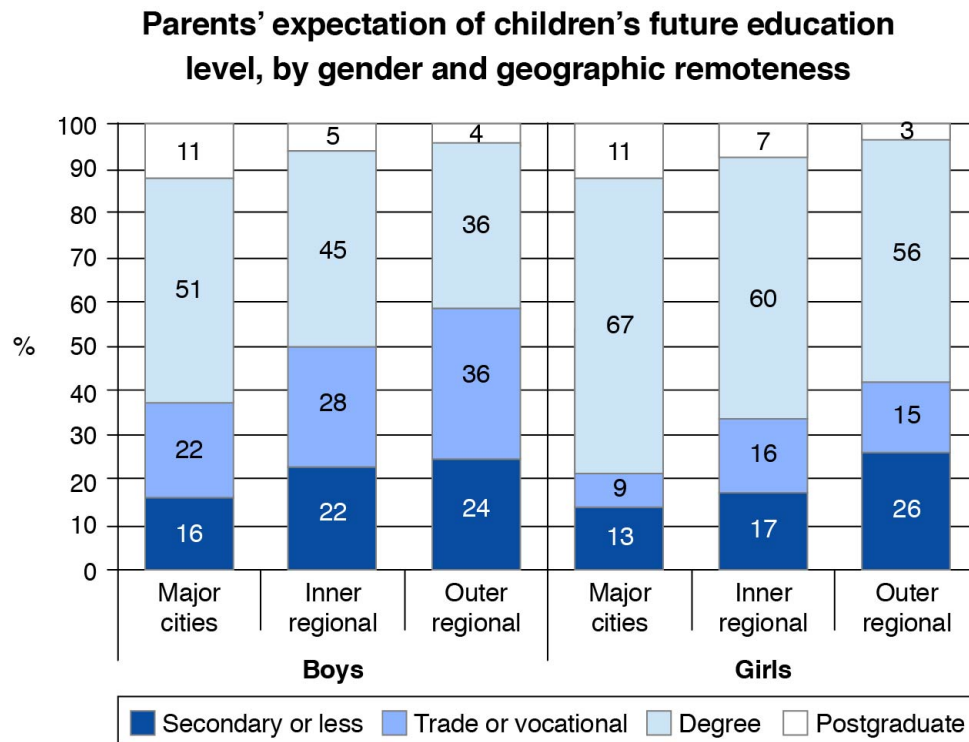
Source: Longitudinal Study of Australian Children (2008)

7.

In which of these groups did almost exactly two-thirds of parents report 'Degree' as an expected level for their child's education?

    A. Boys in major cities
    B. Girls in major cities
    C. Boys in outer regional areas
    D. Girls in outer regional areas

8.

Below are some statements about the graph.

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

Statement	True	False
The expected education levels that parents have for their children are associated with where they live.	T	F
Regardless of where they live, parents expect the same level of education for boys as they do for girls.	T	F

School Excursion

A teacher is planning an excursion from the school to a local park.
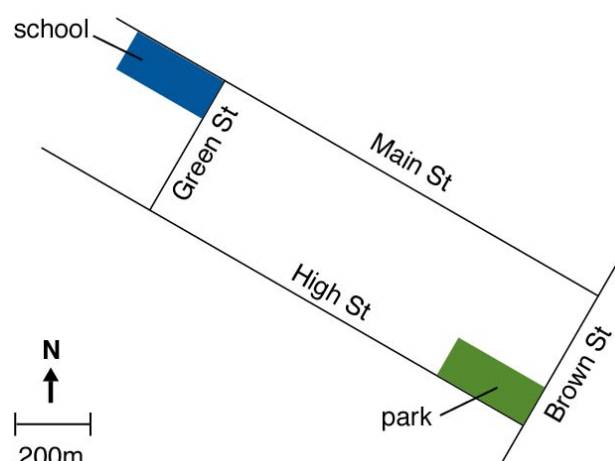
9.

Below are some statements about the map.

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

Statement	True	False
A correct route from the school to the park is south-east along Main St, then left into Brown St.	T	F
The shortest distance from the school to the park along Green St and High St is more than 2 kilometres.	T	F

Water Cost

For the period 1 April to 1 July, a water supply company charged a total of $350.

10.
Which of these amounts is closest to the average cost per day?

    A. $2.90
    B. $3.85
    C. $4.15
    D. $5.85

Resting Heart Rate

This table shows normal ranges of resting heart rate for different ages.

Age	Beats per minute
Newborns, 0–1 month old	70–190
Infants, 2–11 months old	80–160
Children, 1–2 years old	80–130
Children, 3–4 years old	80–120
Children, 5–6 years old	75–115
Children, 7–9 years old	70–110
Children, 10 years and older; and adults	60–100

11.
Below are some statements about the heart rate information.

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

Statement	True	False
An 8-year-old child with a resting heart rate of 115 beats per minute is in the normal range.	T	F
A 12-year-old child with a resting heart rate of 45 beats in 30 seconds is in the normal range.	T	F
In the first 6 years of life, resting heart rate consistently increases with age.	T	F

Parking Survey

Students were concerned about parking at their university.

They conducted a random survey of 3000 students and staff to find out how people usually travelled to the university.

This table shows the results of the survey.

Mode of travel to the university	Number of people
Car (driver)	600
Car (passenger)	900
Public transport	880
Walking	110
Cycling	510

12.
What percentage of people surveyed usually travelled to the university by car as a driver?

☐ %

13.
The total number of students and staff at the university is 12 000.

Using the results of the survey, how many people are expected to usually travel by car (either as driver or passenger) to the university?

☐

Graduate Salaries

This table compares the 2014 and 2015 ranks of the median starting salaries of university graduates in 16 different fields of study.

Rank in 2015	Field of study	Median salary in 2015 ($,000)	No. of graduates in 2015	Rank in 2014
1	Dentistry	80	63	1
1	Optometry	80	30	2
3	Medicine	65	288	4
4	Education	61	1,142	7
5	Earth Sciences	60	61	4
5	Engineering	60	946	3
5	Mathematics	60	78	4
8	Social Work	56	105	8
9	Law	55	289	12
9	Paramedical Studies	55	1,895	8
11	Computer Science	54	359	8
12	Accounting	50	746	14
12	Agricultural Science	50	99	13
12	Biological Sciences	50	448	19
12	Economics, Business	50	1,917	14
12	Physical Sciences	50	69	8

Source: Graduate Salaries report, 2015

14.

Below are some statements about the salary data.

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

Salary data	True	False
The median starting salary for Education graduates was ranked higher in 2015 than 2014.	T	F
The number of graduates in 2015 from fields of study with median salaries greater than $60 000 was less than 1000.	T	F

Classroom Plan

This is the floor plan of a classroom. It is drawn to scale.
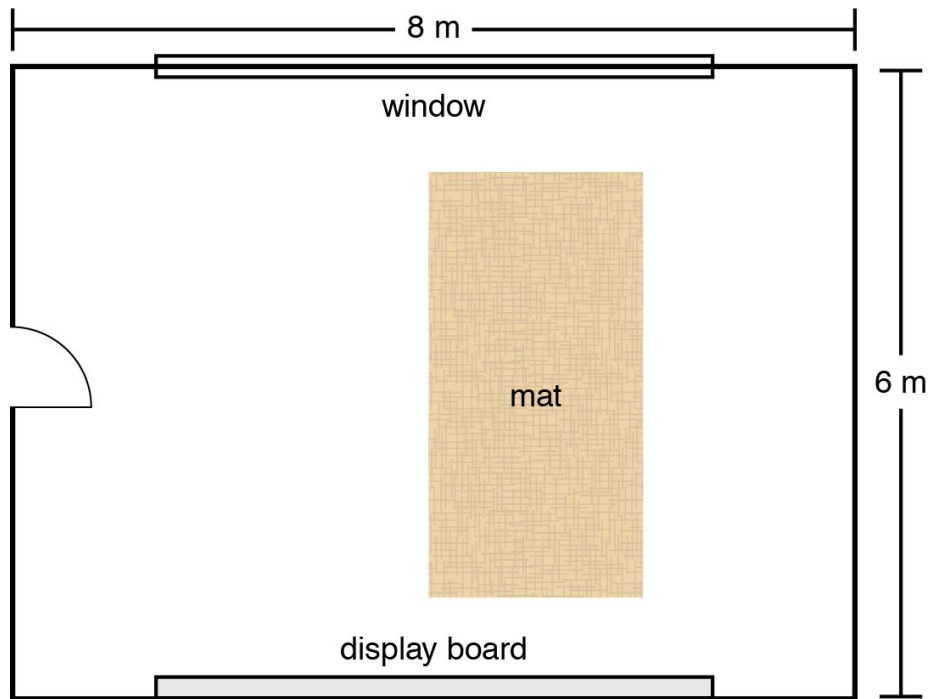
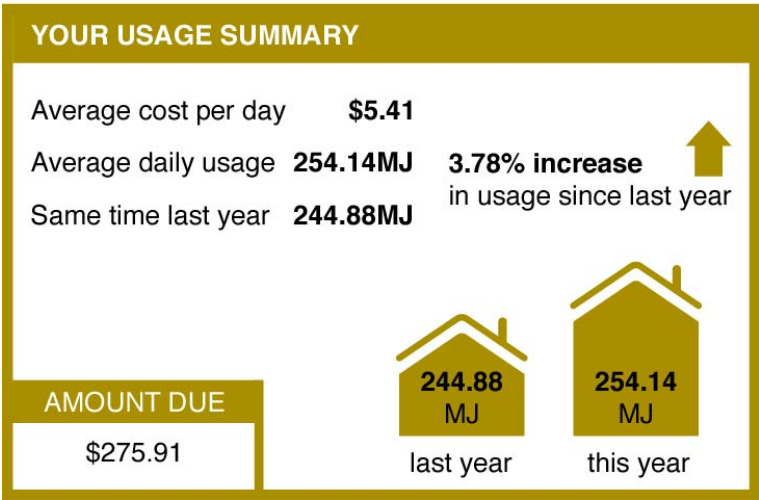**15.**
The dimensions of the mat are closest to

    A. 2 metres by 3 metres
    B. 2 metres by 4 metres
    C. 2 metres by 5 metres
    D. 3 metres by 4 metres
    E. 3 metres by 5 metres

Gas Bill

This is part of a gas bill.

YOUR USAGE SUMMARY

Average cost per day   **$5.41**

Average daily usage   **254.14MJ**

Same time last year   **244.88MJ**

3.78% increase
in usage since last year

AMOUNT DUE

$275.91

244.88 MJ — last year

254.14 MJ — this year

16.

Below are some statements about the bill.

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

Statement	True	False
The increase in the average daily usage since the same time last year exceeds 10 MJ.	T	F
The diagrams on the bill are misleading because the difference in the sizes of the houses is not in proportion with the percentage increase.	T	F

Childcare Ratios

This table shows minimum educator-to-child ratios recommended by the Australian Children's Education and Care Quality Authority for centre-based services.

| Age of children	Recommended minimum educator-to-child ratio
Birth to 24 months	1:4
Over 24 months and less than 36 months	1:5
36 months and up to and including pre-school age	1:11

17.

At a particular centre, there are 18 children in the category 'Over 24 months and less than 36 months'.

What is the recommended minimum number of educators required to care for these 18 children?

[   ]

Parking Sign

This parking sign states that parking is allowed for up to 4 hours for the days and times shown.

At other times there are no restrictions.
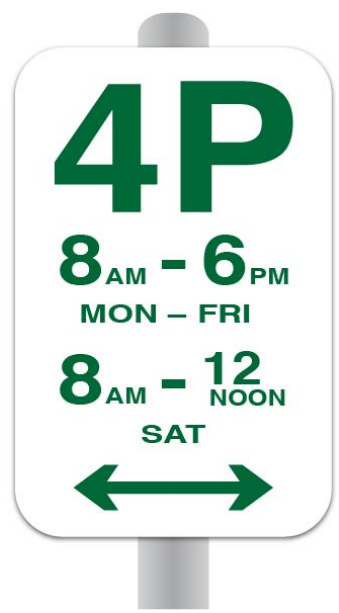
18.

Below are some parking periods.

Is parking allowed for the full extent of these periods?

Select 'Yes' or 'No' for each parking period in relation to the sign.

Parking period	Yes	No
From 9 am to 2 pm on Tuesday	Y	N
From 5 pm to 10 pm on Friday	Y	N

Language Spoken

This table shows how Australians responded to a question on the census in 2006 and 2011 about the language they spoke at home.

Language summary	2006		2011		Change from 2006 to 2011
	Number	%	Number	%	
English only	15,581,334	78.5	16,508,347	76.8	+927,013
Language other than English	3,146,180	15.8	3,911,720	18.2	+765,540
Not stated	1,127,758	5.7	1,084,623	5.0	-43,135
Total population	19,855,272	100.0	21,504,690	100.0	+1,649,418

Based on Australian Bureau of Statistics data

19.

What was the change in the percentage who spoke a language other than English at home, from 2006 to 2011?

A. 1.7% decrease
B. 1.7% increase
C. 2.4% decrease
D. 2.4% increase

Children and Technology

A survey was conducted for parents of children aged 0-5 years.

They were asked to indicate which skills their children were able to complete unassisted on a tablet device.

This graph shows some results from the survey.
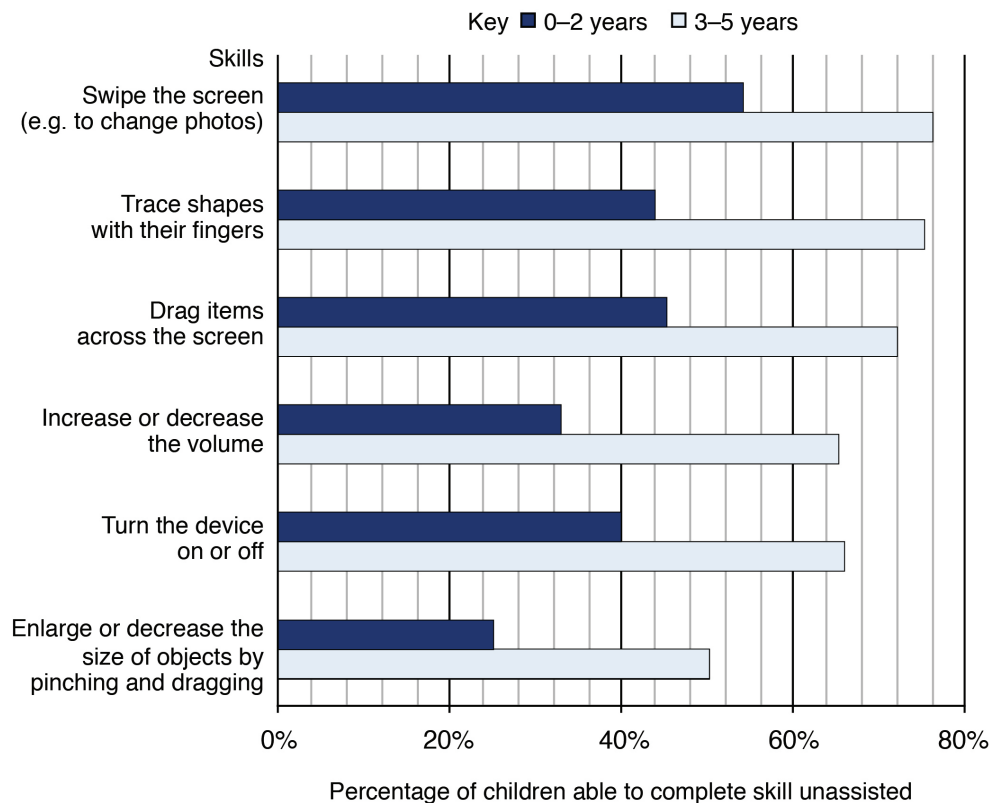
Source: Exploring Play and Creativity in Pre-Schoolers' Use of Apps: Report for Early Years Practitioners, 2015

20.
What percentage of children aged 0–2 years were able to trace shapes with their fingers?

- A. 45%
- B. 44%
- C. 43%
- D. 42%
- E. 41%

Daily Energy

Basal Metabolic Rate (BMR) is used to predict the minimum amount of daily energy the body uses to function when resting.

BMR can be calculated using the following formulae:

For males: BMR = (10 × weight) + (6.25 × height) – (5 × age) + 5

For females: BMR = (10 × weight) + (6.25 × height) – (5 × age) – 161

Weight is measured in kilograms, height in centimetres, age in years and BMR in kilojoules.

21.

What is the BMR of a male who is 30 years of age with weight 85 kilograms and height 180 centimetres?

| | kilojoules

22.
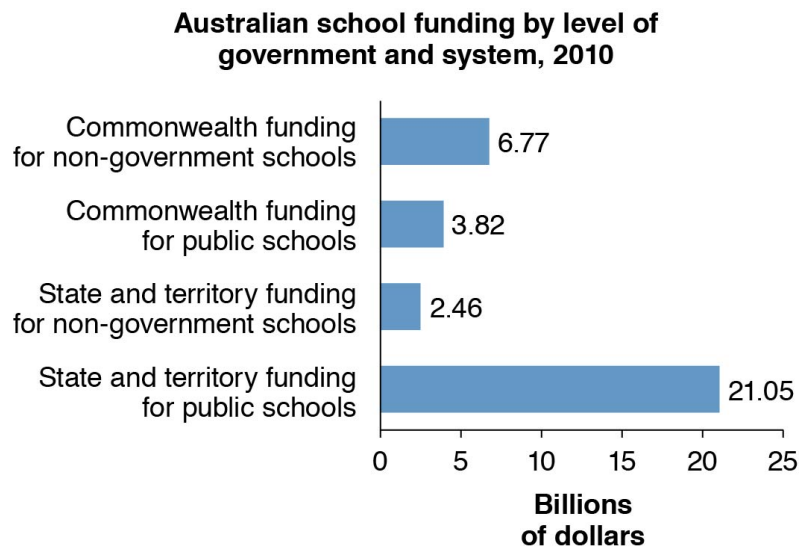
Below are some statements about the BMR formulae.

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

Statement	True	False
For a male who maintains constant weight and height, BMR at age 50 will be half their BMR at age 25.	T	F
Females have a lower BMR than males of the same height, weight and age.	T	F

School Funding

This graph shows government funding for Australian schools (in billions of dollars) in 2010.

Australian school funding by level of government and system, 2010

| Category	Billions of dollars
Commonwealth funding for non-government schools	6.77
Commonwealth funding for public schools	3.82
State and territory funding for non-government schools	2.46
State and territory funding for public schools	21.05

Source: THE CONVERSATION, 2013

23.

Which of these best approximates the 'Commonwealth funding for public schools' as a fraction of the total school funding by government in 2010?

A. $\dfrac{1}{9}$

B. $\dfrac{1}{6}$

C. $\dfrac{1}{5}$

D. $\dfrac{1}{4}$

Scatterplot

A teacher administers online literacy and numeracy assessments to her students.

The software produces this graph.

Relationship between Literacy Scores and Numeracy Scores for Year 1 Students
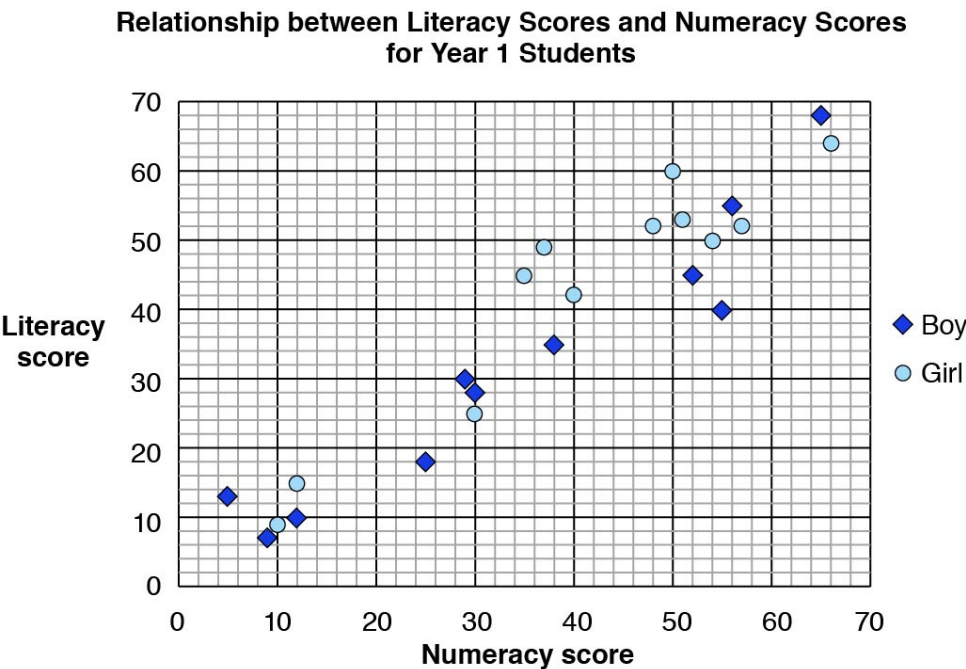
24.

One girl in the class has a numeracy score of 40.

What is the girl's literacy score?

┌─────────────┐
│   │
└─────────────┘

25.

Below are some statements about the graph.

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

Statement	True	False
Students who have high literacy scores tend to have high numeracy scores.	T	F
The mean literacy score of the boys was greater than the mean literacy score of the girls.	T	F
The highest numeracy score by a girl was 63.	T	F

HECS Loans

A newspaper report from 2016 had this comment about the growth in HECS loans.

> 'By 2026, $4 billion worth of new loans will probably never be repaid and have to be written off each year, up from $1.9 billion currently.'

26.

What is the difference between $4 billion and $1.9 billion?

A. $2 100 000
B. $21 000 000
C. $210 000 000
D. $2 100 000 000

Remote Bus

This table shows the times and fares for a bus from Katherine to Darwin.

All fares in the table are from Katherine.

For example, the fare for a child travelling from Katherine to Palmerston is $40.

KATHERINE TO DARWIN							
	Dep	Arr	Arr	Arr	Arr	Arr	Arr
	8:00 AM	9:00 AM	9:30 AM	10:00 AM	10:30 AM	11:15 AM	11:30 AM
	Katherine	Pine Creek	Emerald Springs	Hayes Creek	Adelaide River	Palmerston	Darwin Airport
Adult	-	$40	$50	$50	$50	$70	$70
Concession	-	$30	$40	$40	$40	$60	$60
Child	-	$20	$30	$30	$30	$40	$40

27.

Below are some statements about the bus fares.

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

Statement	True	False
The cost of a concession ticket from Katherine to Pine Creek is $40.	T	F
The total cost of 1 adult ticket and 3 child tickets from Katherine to Hayes Creek is $140.	T	F
The cost of a concession ticket is a fixed percentage of the cost of an adult ticket.	T	F

Professional Development

To maintain her teacher registration, Jennifer is required to undertake 100 hours of approved professional development over a **five**-year period.

For the last two years, her approved professional development has been:

- conference attendance: 16 hours
- anaphylaxis awareness training: 4.5 hours
- school-based professional development: 12.5 hours
- online webinar attendance: 2.5 hours

28.

For the next three years, what is the average number of hours of professional development per year that Jennifer needs to complete?

- A. 17.75 hours
- B. 20 hours
- C. 21.5 hours
- D. 35.5 hours

Section 2: Calculator Not Available

These questions are to be attempted without using a calculator.

Waterfall Distance

Waterfall 0.75 km ➡

29.
How many metres to the waterfall?

[   ] m

Large School

There are 1200 students in a large inner-city school.

30.

Two-fifths of the students speak a language other than English at home.

How many students is this?

[   ]

Indigenous Languages

A census found that there were 146 Indigenous languages spoken across Australia.

Of these languages:
- 46 were regularly spoken by between 100 people and 1000 people inclusive.
- 16 were regularly spoken by more than 1000 people.

31.
How many Indigenous languages were spoken by fewer than 100 people?

Goals Scored

This table shows the distribution of goals scored by a team for the first 10 games of a season.

Number of goals scored each game	Frequency
0	1
1	2
2	4
3	1
4	1
5	1

32.

What was the mean number of goals per game for the first 10 games of the season?

School Day

The Australian Curriculum is designed for a 40-week school year and 1600 minutes of instruction time per 5-day week.

33.

How much instruction time is this **per day** in a 5-day week?

- A. 3 hours and 20 minutes
- B. 3 hours and 50 minutes
- C. 5 hours
- D. 5 hours and 20 minutes

Envelope Size

A large envelope is 266 mm wide and 376 mm long.

34.

What are the dimensions of the envelope expressed in **centimetres**?

- A. 0.266 and 0.376
- B. 2.66 and 3.76
- C. 26.6 and 37.6
- D. 2660 and 3760

Data Limit

Alex has a monthly data limit of 5 GB for internet access.

35.

Alex has used 2.35 GB of data so far this month.

How much more data can Alex use before he reaches his monthly limit?

|_____| GB

Solutions

Section 1

Question	Solution
1	T; F; T
2	6
3	11 or 11th
4	20
5	16 080
6	60
7	B
8	T; F
9	F; F
10	B
11	F; T; F
12	20
13	6000
14	T; F

Question	Solution
15	B
16	F; T
17	4
18	N; Y
19	D
20	B
21	1830
22	F; T
23	A
24	42
25	T; F; F
26	D
27	F; T; F
28	C

Section 2

Question	Solution
29	750
30	480
31	84
32	2.2
33	D
34	C
35	2.65