STAT PNG

Skills for Tertiary Admissions Test

Practice Questions

The Papua New Guinea University of Technology

The University of Goroka

The Pacific Adventist University

Divine Word University

More details about test day preparation for STAT PNG can be found at https://statpng.acer.org/prepare

Australian Council *for* Educational Research
19 Prospect Hill Road, Camberwell VIC 3124

Test Booklet Directions (example)

Instructions

1 This test has 70 questions.

2 You will gain the best possible score if you:

- work carefully through the questions in order.
- don't waste too much time on any one question; if necessary, go on to the next question and come back to the difficult ones later.
- mark an answer if you think you know it – even if you are not certain you are correct. Marks are **not** deducted for wrong answers.
- correctly mark each answer you chose on your *Answer Sheet*.

3 Each question has four alternative answer options, represented by the letters **A B C D**. You must choose **one** answer from these alternatives.

Example:

The total number of questions in this test is

A 70 . **B** 50 . **C** 35 . **D** 32 .

Find the letter matching your answer choice.

The correct answer is 70. As the letter **A** represents the answer, you will shade circle 'A' with your pencil on your *Answer Sheet*.

4 If you want to change your answer, rub it out completely. Only **one** letter should be marked for each question for the answer to be counted in your score.

5 At the end of the test this *STAT PNG Test Booklet* must be handed in. It is the property of ACER.

6 Look through the Test Booklet to check that no pages are blank or misprinted.

7 Do NOT start writing on your *Answer Sheet* until the supervisor tells you to begin.

Filled-in Answer Sheet (example)

STAT PNG

Skills for Tertiary Admission Test

First Name: _____

Family Name: _____

Signature: _____

INSTRUCTIONS:

USE PENCIL ONLY

MARK LIKE THIS:

EXAMPLE:
Write numbers in the boxes first, then fill the matching circle underneath.

Test Booklet Number
0 2 1 2

Today's Date

Day	Month	Year
		20

STAT PNG ID Number

Family Name | **Initials**

Test Booklet Number

Test Centre Number

Date of Birth

Day	Month	Year

SAMPLE

MARK YOUR ANSWER HERE (one per question)

1	16	31	46	61
2	17	32	47	62
3	18	33	48	63
4	19	34	49	64
5	20	35	50	65
6	21	36	51	66
7	22	37	52	67
8	23	38	53	68
9	24	39	54	69
10	25	40	55	70
11	26	41	56	
12	27	42	57	
13	28	43	58	
14	29	44	59	
15	30	45	60	

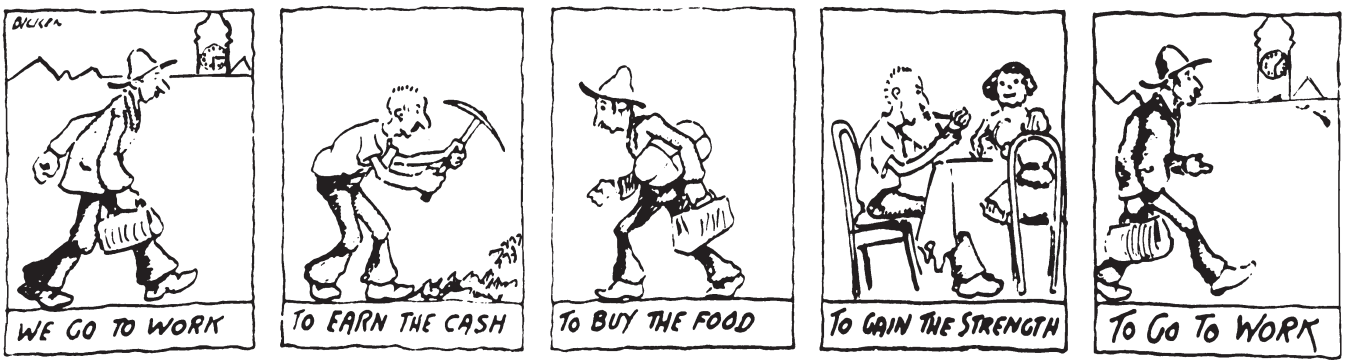
DO NOT FOLD OR DEFACE THIS SHEET IN ANY WAY

Practice Questions

UNIT 1

Question 1

1 The point of the cartoon is to suggest that work is



A habitual and pointless.
B simple and comforting.
C strenuous but satisfying.
D demanding but necessary.

UNIT 2

Question 2

In the grid below, different letters represent different whole numbers less than 20. The numbers to the right and below the grid are row and column totals.

For example, Q + L + Z + Z = 46 .

Q	L	Z	Z	46
K	K	K	K	28
K	K	Q	Q	32
K	Z	L	Q	40
30	38	X	Y	

2 The value of Q is

A 7 .
B 9 .
C 11 .
D 13 .

UNIT 3

Questions 3 – 6

The following are four comments which have been made about experts and the nature of expertise.

I An expert is someone who has made all the mistakes which can be made in a very narrow field.
(Niels Bohr)

II In the beginner's mind there are many possibilities; in the expert's mind there are few.
(Shunryu Suzuki)

III Where facts are few, 'experts' are many.
(Donald R. Gannon)

IV An expert is a person who avoids the small errors as he sweeps on to the grand misconception.
(Benjamin Stolberg)

3 Comment I views expertise as the result of

A persistence and a restricted approach.
B an open mind and a creative approach.
C a disciplined mind and an ordered approach.
D natural brilliance and an imaginative approach.

4 Comment II emphasises experts'

A patience.
B inspiration.
C experience.
D enthusiasm.

5 The 'experts' in comment III

A are cooperative by nature.
B are competitive by nature.
C thrive where there is certainty.
D thrive where there is uncertainty.

6 Which two comments treat a normally negative characteristic as a positive characteristic in experts?

A I and II
B I and III
C II and IV
D III and IV

UNIT 4

Questions 7 – 9

When fighting forest fires, a major problem for firefighters is dealing with the heat. Heat enters, leaves or is produced in a firefighter's body by the following processes:

1 radiation — heat from the fire and the sun radiate to the firefighter's body
2 conduction/convection — body heat is carried away by the surrounding air
3 metabolism — heat is produced in the firefighter's body
4 evaporation of sweat — heat is removed from the firefighter's body when sweat evaporates from skin and clothing

In a study of heat balance in firefighters, two groups of firefighters built a firebreak — a hard physical task. One group built their firebreak next to a fire. The other group did exactly the same work under the same conditions, except that no fire was burning nearby. The table below gives the average results for the firefighters in the two groups.

Process	Amount of heat gained or lost per minute by the body	
	fire nearby	**no fire nearby**
Radiation	gain of 260 joule	gain of 51 joule
Conduction / convection	loss of 60 joule	loss of 80 joule
Metabolism	gain of 488 joule	gain of 561 joule
Evaporation of sweat	loss of 688 joule	**?**

- Assume that the figures above apply to any individual firefighter.
- Although some of the processes above can transfer heat to or from a firefighter, this unit and the table refer to net gains or losses of heat by each process.

7 When fighting forest fires, the body of a firefighter

A loses heat by radiation and gains heat by conduction/convection.
B loses heat by both radiation and by conduction/convection.
C gains heat by radiation and loses heat by conduction/convection.
D gains heat by both radiation and by conduction/convection.

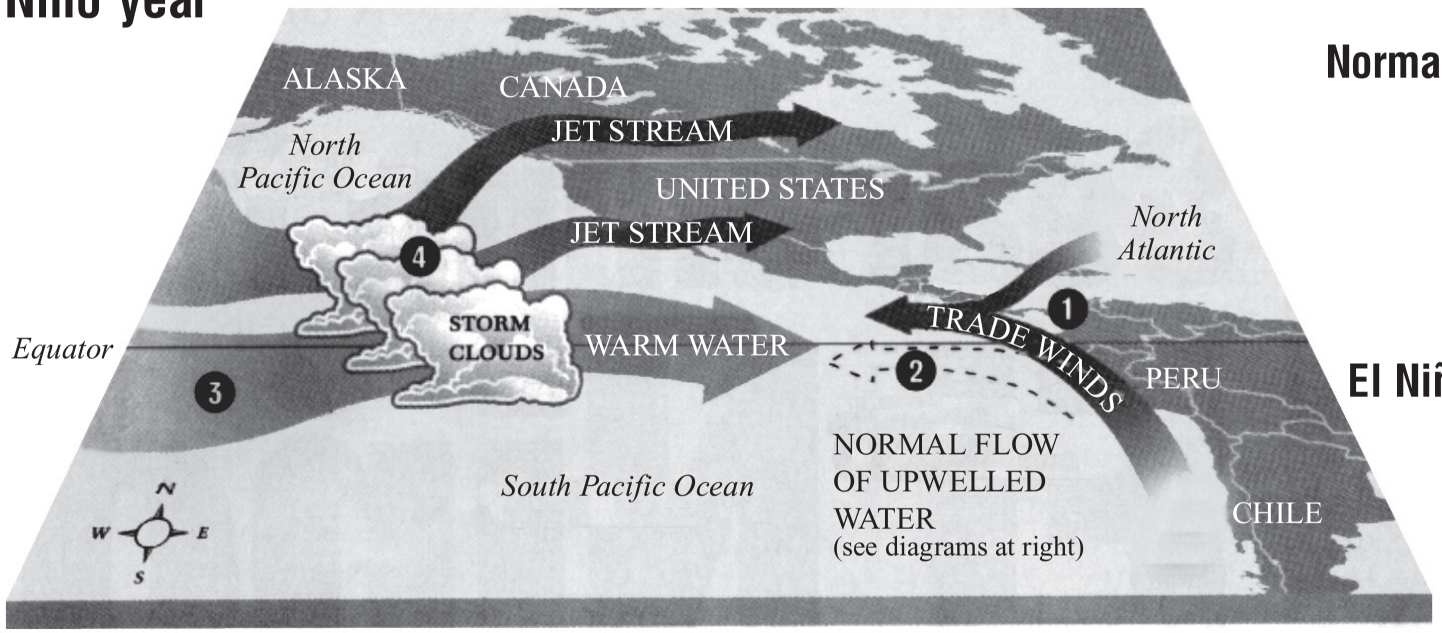
8 The heat lost by evaporation of sweat from the body of a firefighter in one minute while building a firebreak without a fire nearby is

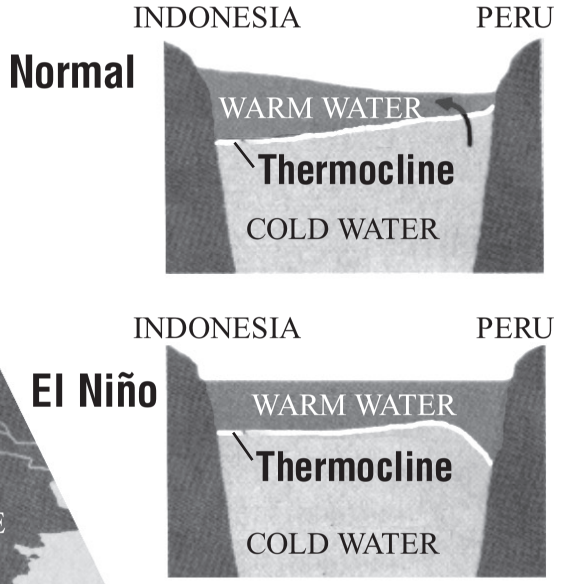
A 532 joule.
B 590 joule.
C 612 joule.
D 688 joule.

9 Which one of the following increases when a firefighter moves from an area where there is no fire nearby to an area where there is a fire nearby?

A the amount of heat produced per minute by metabolism
B the amount of heat lost per minute by conduction/convection
C the amount of heat lost per minute by the evaporation of sweat
D none of **A** or **B** or **C**

El Niño year





1

Normal year: The trade winds blow from east to west, pulling warm water behind.

El Niño year: The trade winds slacken, for largely mysterious reasons.

2

Normal year: Cold, nutrient-rich water wells up from below, supporting the Pacific food chain.

El Niño year: Stationary warm water prevents upwelling. Fish stocks fall.

3

Normal year: A pool of warm water sits off Indonesia, bringing rains to the region.

El Niño year: The warm water sloshes east, taking the storm clouds with it.

4

Normal year: The jet streams deliver rain to southern Mexico and the Pacific Northwest.

El Niño year: The jet streams shift north, and so do the rains.

UNIT 5

Questions 10 – 14

This unit is based on the diagram on the previous page.

10 The El Niño phenomenon is first indicated by variations in

A water currents.
B storm clouds.
C jet streams.
D winds.

11 The cross-section diagrams to the right of the main map draw attention to the effects of

A cold water in creating rough seas and rain-bearing storm clouds.
B unnatural increases in water volume on overall sea levels.
C global warming on the average temperature of the ocean.
D warm water fluctuations on weather and the food chain.

12 In an El Niño year, absence of warm water is likely to cause Indonesia to experience

A storms.
B reduced rainfall.
C cold wind blasts.
D stronger jet streams.

13 One effect of El Niño in 1982 was to destroy the anchovy fishing industry in Peru. According to the information given in the diagrams and text, the most likely reason for this was that

A stronger trade winds off the coast of Peru made fishing hazardous.
B the fish were driven away by cold water welling up from below.
C jet streams redirected to the south caused havoc.
D the fish were deprived of food.

14 In an El Niño year floods are caused in desert regions of South America because

A the southerly jet stream from Indonesia has caused more wetness and cold.
B deep cold water has risen abnormally to flood proportions.
C large areas of warm water have settled along the coast.
D overall sea levels have dropped due to trade winds.

UNIT 6

Questions 15 – 18

At Runalong Fire Station there are seven firefighters (1, 2, 3, 4, 5, 6, 7). It is necessary to have three firefighters at the station each night in case of emergency, and the Firefighters' Union requires that each firefighter works the same number of nights.

Schedules I–IV were prepared for consideration.

	I	II	III	IV
Sunday	{1,2,4}	{1,2,4}	{1,2,4}	{1,2,4}
Monday	{2,3,5}	{2,3,5}	{2,3,5}	{2,3,5}
Tuesday	{3,4,6}	{3,4,6}	{3,4,6}	{3,4,6}
Wednesday	{4,5,7}	{4,5,7}	{1,2,4}	{4,5,7}
Thursday	{1,2,4}	{5,6,1}	{5,6,1}	{5,6,1}
Friday	{2,3,5}	{6,7,2}	{6,7,2}	{7,1,2}
Saturday	{3,4,6}	{7,1,3}	{7,1,3}	{6,1,3}

15 Which one of the schedules meets the requirements of the Firefighters' Union?

A I
B II
C III
D IV

Questions 16 – 18 refer to the following additional information:

A schedule can be thought of as a set of v objects (in this case, firefighters) that have to be arranged into b sets (in this case, one set for each day of the week) all of size k and such that each object occurs the same number of times (r) in the schedule and only once in any set. For the firefighters' schedules, $v = 7$, $b = 7$, $k = 3$, and $r = 3$.

16 If $v = 3$, $b = 6$, $k = 1$, $r = 2$, which one of the following completes the schedule {1}, {2}, {3}, {1}, {2}, . . .?

A {1}
B {2}
C {3}
D neither A, nor B, nor C

17 The schedule {1,2}, {2,3}, {x,y} is a schedule for which $v = 3$, $b = 3$, $k = 2$, $r = 2$, if

A $x = 1, y = 2$.
B $x = 1, y = 3$.
C $x = 2, y = 2$.
D $x = 2, y = 3$.

18 The schedule

{1,2,3}	{4,5,6}	{7,8,9}	{1,4,7}
{2,5,8}	{3,6,9}	{1,5,9}	{2,6,7}
{3,4,8}	{1,6,8}	{2,4,9}	{x,y,z}

is a schedule for which $v = 9$, $b = 12$, $k = 3$, $r = 4$, if

A $x = 1, y = 2, z = 4$.
B $x = 1, y = 3, z = 5$.
C $x = 2, y = 4, z = 6$.
D $x = 3, y = 5, z = 7$.

UNIT 7

Questions 19 – 21

The following passage is adapted from a book on the nature of play.

The player who trespasses against the rules or ignores them is a 'spoil-sport'. The spoil-sport is not the same as the false player, the cheat; for the latter pretends to be playing the game and, on the face of it, still acknowledges the magic circle. It is curious to note how much more lenient society is to the cheat than to the spoil-sport. This is because the spoil-sport shatters the play-world itself. By withdrawing from the game he reveals the relativity and fragility of the play-world in which he had temporarily shut himself with others. He robs play of its illusion – a pregnant word which in Latin means literally 'inplay'. Therefore he must be cast out, for he threatens the existence of the play-community.

In the world of high seriousness, too, the cheat and the hypocrite have always had an easier time of it than the spoil-sports, here called apostates[1], heretics, innovators, prophets, conscientious objectors, etc. It sometimes happens, however, that the spoil-sports in their turn make a new community with rules of its own. The outlaw, the revolutionary, the member of a secret society, indeed heretics of all kinds, are of a highly associative if not sociable disposition, and a certain element of play is prominent in all their doings.

[1] An apostate is someone who abandons his/her religion, vows, principles, cause, etc.

19 The phrase 'magic circle' (line 3) most likely refers to

A the real world.
B a particular kind of game.
C the special status of the play-world.
D the privileged few who determine the rules of a game.

20 The writer suggests that society is more lenient to the cheat than to the spoil-sport (lines 10 and 11) because

A cheats are rarely caught.
B cheats usually hold positions of power.
C cheats transgress society's rules without undermining them.
D society recognises that everybody cheats at some time or another.

21 According to the passage, the 'play-world'

A cannot coexist with the real world.
B cannot be distinguished from the real world.
C is impervious to the will or behaviour of the participants.
D is completely dependent on the compliance of the participants.

Questions 22 – 26

In some areas of the world, marine birds such as gulls feed on mussels washed up on the beaches. To break open the shells, the birds carry the mussels to heights and drop them onto hard surfaces, such as rocks or wet beach sand.

Experimental evidence indicates that the minimum drop height required to fracture a mussel shell depends on its size, and also on the nature of the surface onto which it is dropped. The speed on impact with the ground can be related to the mussel's drop height and its shell length.

The graphs in Figures 1 to 4 show the relationships between the size, impact speed, and drop height of mussels. The figures are based on the results of extensive mussel dropping experiments that attempted to simulate what the birds do.

Assume that all mussels referred to in the following questions are described by these relationships.

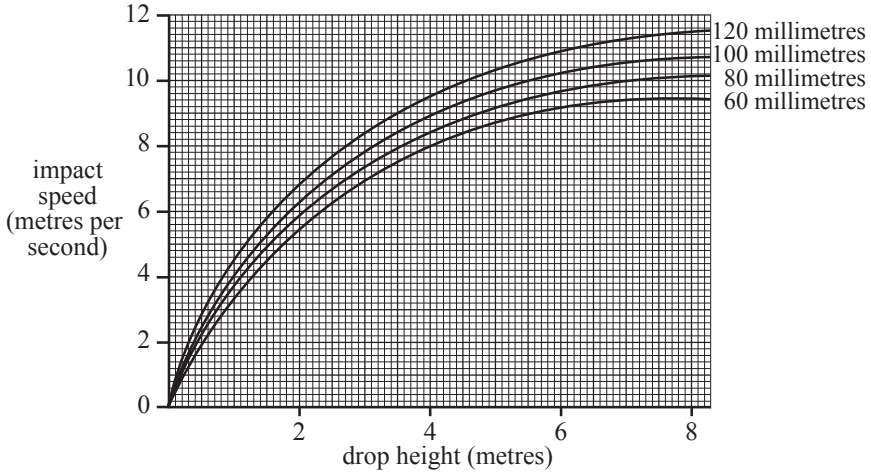


Figure 1

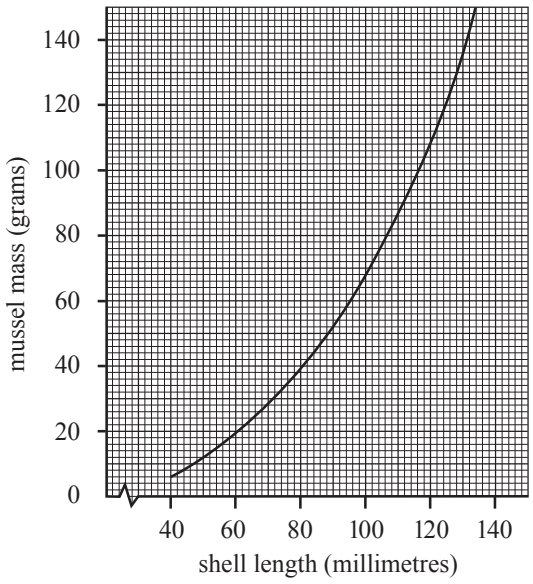


Figure 2

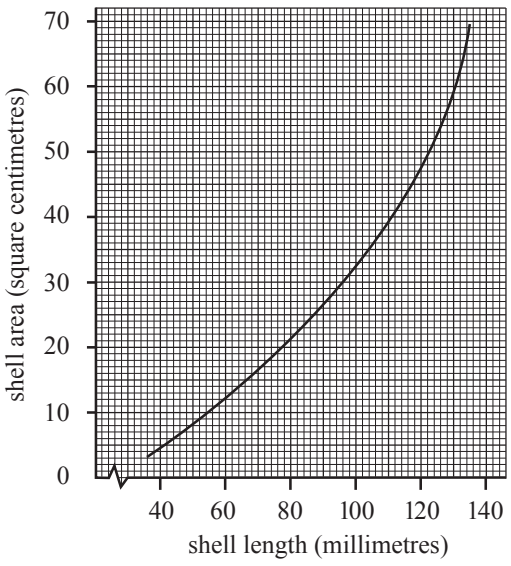


Figure 3

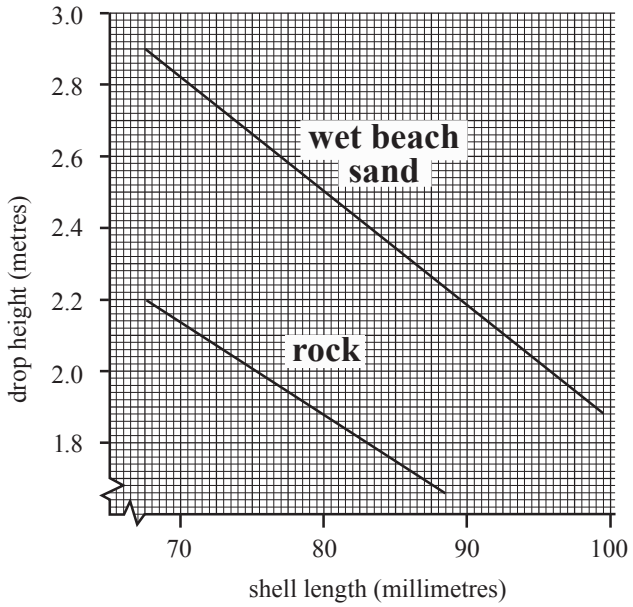


Figure 4

22 An 80 gram mussel has a shell area closest to

A 20 square centimetres.
B 24 square centimetres.
C 40 square centimetres.
D 45 square centimetres.

23 Which one of the following is the smallest drop height required to fracture three mussels with lengths 75 millimetres, 85 millimetres, and 100 millimetres, when all three are dropped onto wet beach sand?

A 1.90 metres
B 2.35 metres
C 2.67 metres
D 3.00 metres

24 Two mussels are dropped from a height of 2.5 metres onto wet beach sand. Mussel *X* has a mass of 30 grams and mussel *Y* has a mass of 60 grams.

According to the available evidence,

A only mussel *X* will fracture.
B only mussel *Y* will fracture.
C both mussels will fracture.
D neither mussel will fracture.

25 For a group of mussels which all have a shell length of 80 millimetres, the difference between the drop heights required to fracture the mussels when they drop onto rock and wet beach sand is closest to

A 0.6 metres.
B 1.0 metres.
C 1.9 metres.
D 2.5 metres.

26 Which of the following is closest to the lowest impact speed required to fracture a 30 gram mussel by impact with wet beach sand?

A 5.5 metres per second
B 6.8 metres per second
C 8.4 metres per second
D 10 metres per second

Answers

Unit 1: Work Cartoon (Verbal Reasoning)

1 A

Unit 2: Grid (Quantitative Reasoning)

2 B

Unit 3: Expert Comments (Verbal Reasoning)

3 A
4 C
5 D
6 A

Unit 4: Firefighters (Quantitative Reasoning)

7 C
8 A
9 C

Unit 5: El Niño (Verbal Reasoning)

10 D
11 D
12 B
13 D
14 C

Unit 6: Runalong Fire Station (Quantitative Reasoning)

15 B
16 C
17 B
18 D

Unit 7: The Spoil Sport (Verbal Reasoning)

19 C
20 C
21 D

Unit 8: Mussels (Quantitative Reasoning)

22 C
23 C
24 B
25 A
26 B