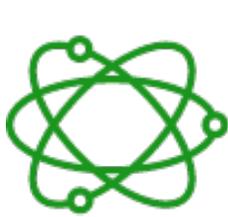




# PREMIER GENIE

— FORMULA FOR SUCCESS —



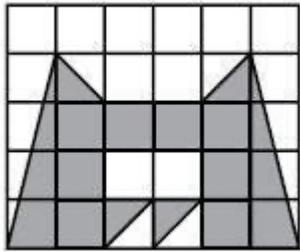
## DUBAI STEM OLYMPIAD

2022

Junior Category

MATH Sample paper

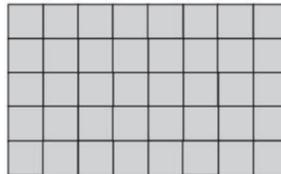
1. If each square represents an area of 3 square units then what fraction of the entire shape is unshaded.



- a)  $7/15$
- b)  $8/15$
- c)  $10/15$
- d)  $6/15$

2. Meriam wants to cover the top of the Kitchen table with the coloured paper. The top of the table is as shown below. How many square cm. of paper does she need if each square equal 4 square centimeter

- a) 40
- b) 80
- c) 120
- d) 160



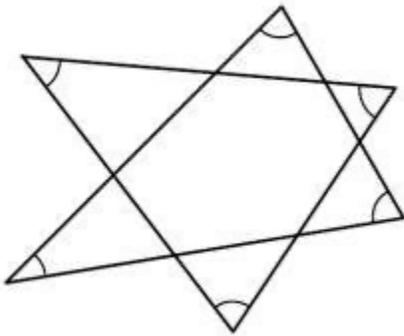
3. By how much is  $13/35$  greater than  $1/5$ ?

- a)  $12/35$
- b)  $12/5$
- c)  $6/35$
- d)  $6/5$

4. I think of a number, double it, then add five. The result is 11. What was the original number?

- A) 2
- B) 3
- C) 4
- D) 5

5. What is the sum of the angles marked in the diagram?

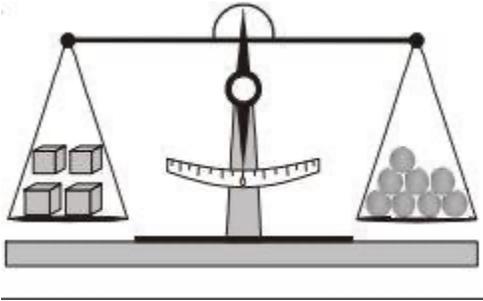


- A) 180
- B) 360
- C) 540
- D) Cannot be determined

6) Martyn put 70 Marbles in the first stack, 80 in the second stack, and 90 in the third stack. If this pattern continues, how many marbles will Martyn put in the Eighth stack?

- A) 100
- B) 120
- C) 140
- D) 160

7) How many oranges can balance the weight of one cube ?

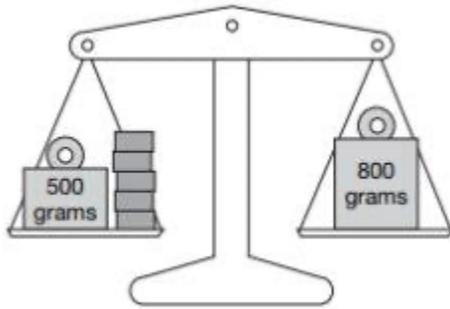


- A) 1
- B) 2
- C) 3
- D) 8

8) The price of 1kg of apples is 85 pence. What is the price of 200 grams of apples?

- A) £ 4.25
- B) 17 pence
- C) £ 4
- D) £ 3.25

9) Lin has five blocks which are all the same.  
She balances them on the scale with two weights.



- A) 300 grams
- B) 60 grams
- C) 50 grams
- D) 150 grams

10) David and his friends prepare a picnic. Each person at the picnic will get:

3 sandwiches

2 bananas

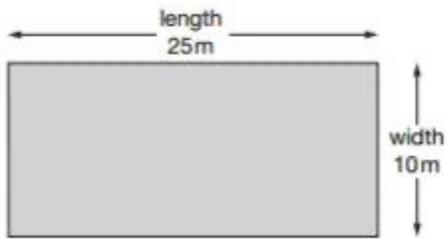
1 packet of crisps

The children pack 45 sandwiches.

How many more bananas than crisps do they pack?

- A) 30
- B) 45
- C) 15
- D) 60

11) A rectangular swimming pool is 25 meters long and 10 meters wide.



David swims 15 lengths. Rosie swims 36 widths.

How much further does David swim than Rosie?

- A) 375 m
- B) 360 m
- C) 15m
- D) 150m

12) Arrange the following polygons in order from least to greatest number of sides:

HEXAGON

TRIANGLE

DECAGON

PENTAGON

- (a) decagon, hexagon, pentagon, triangle
- (b) hexagon, triangle, decagon, pentagon
- (c) triangle, pentagon, hexagon, decagon
- (d) pentagon, decagon, triangle, hexagon

13) Which words do not describe the numbers 3, 6, 9 and 12?

- a) Factors of 36
- b) Whole numbers
- c) Square numbers
- d) Multiples of three

14) What is the equivalent fraction of  $\frac{3}{7}$  having a denominator is 35?

- A)  $\frac{3}{35}$
- B)  $\frac{7}{35}$
- C)  $\frac{15}{35}$
- D) none of the above

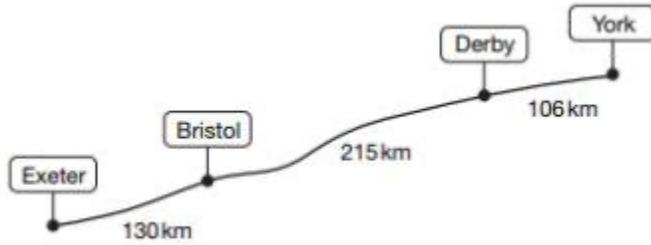
15) What is the value of  $5 + 2 \cdot 15 + (12 \cdot 4)$ ?

- A. 78
- B. 83
- C. 131
- D. 153

16) Which 3 dimensional shape has 5 vertices?

- A) Triangular prism
- B) square pyramid
- C) triangular pyramid
- D) Cuboid

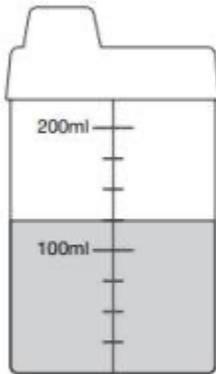
17) The diagram shows distances on a train journey from Exeter to York.



How many kilometers is it altogether from Bristol to York?

- A) 215 km
- B) 345km
- C) 321 km
- D) 451km

18) Here is a baby's drinking cup.

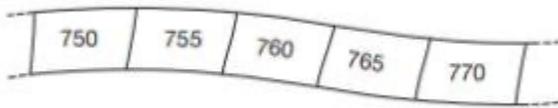


How many milliliters of water are in the cup?

- A) 100ml
- B) 125ml
- C) 150ml
- D) 200ml

19) Here is part of a number sequence.

The numbers increase by the same amount each time



The sequence continues.

which number from the below options would appear in the sequence.

- A) 804
- B) 805
- C) 912
- D) 948

20)

Large pizzas cost £15 each.

Small pizzas cost £10 each.

Five children together buy one large pizza and three small pizzas.

They share the cost equally.

How much does each child pay?

- A) £45
- B) £9
- C) £27
- D) £7

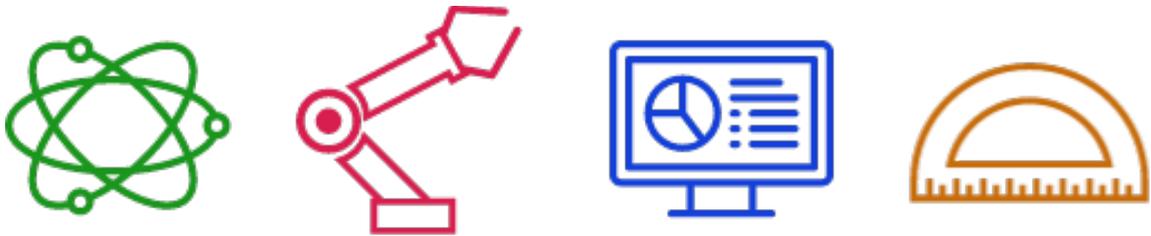
Answer scheme:

- 1) B
- 2) D
- 3) C
- 4) B
- 5) B
- 6) C
- 7) B
- 8) B
- 9) B
- 10) C
- 11) C
- 12) C
- 13) C
- 14) C
- 15) B
- 16) B
- 17) C
- 18) B
- 19) B
- 20) B



# **PREMIER GENIE**

— FORMULA FOR SUCCESS —



# **DUBAI STEM OLYMPIAD**

**2022**

**Junior Category**

**Computer Science - Sample paper**



- 1) Is this device Input or Output?  
Input  
Output
- 2) A security camera is an output device  
true  
false
- 3) Which of these is an output device  
mouse  
joystick  
headphones  
bar code reader
- 4) What is the most suitable input device for inputting a short report?  
Mouse  
Scanner  
Keyboard
- 5) If Sheila wants to capture sound on her computer, she would need a \_\_\_\_\_.  
keyboard  
webcam  
headphones  
microphone
- 6) Which hardware is used to input data signals to a computer by touching a monitor?  
Mouse  
Audio input  
Video input  
Speaker
- 7) The \_\_\_\_\_ may also be called the screen or monitor.  
printer  
scanner  
hard disk  
display
- 8) What is the most suitable input device for highlighting or selecting an object on the screen?  
Joystick  
Mouse  
Keyboard

- 9) What type of device is a digital camera?  
Input  
Output  
Software  
Storage
- 10) Which of the following groups consists of only input devices?  
Mouse, Keyboard, Monitor  
Mouse, Keyboard, Printer  
Mouse, Keyboard, Plotter  
Mouse, Keyboard, Scanner
- 11) Which among the following has highest speed?  
a. CPU  
b. Main memory  
c. Input/output devices  
d. All have the same speed
- 12) Computer memory consists of  
a. RAM  
b. ROM  
c. PROM  
d. All of the above
- 13) A compiler means  
a. A person who compiles source programs  
b. The same thing as a programmer  
c. Key punch operator  
d. A program which translates source program into object program
- 14) A character or object in Scratch programming  
a. sprite  
b. costume  
c. event  
d. script
- 15) What are the basic operations which are performed by a computer?  
a. Arithmetic operation  
b. Logical operation  
c. Storage and relative  
d. All the above
- 16) Runs the same sequence multiple times  
a. Events  
b. Loop  
c. Costume  
d. Sprite

17) a set of instructions

- a. Algorithm
- b. Events
- c. Debug
- d. Loop

18) Fixing/finding mistakes that exist in code

- a. Debug
- b. Sequence
- c. Events
- d. Broadcast

19) The computational concept of making things happen at the same time

- a. Parallelism
- b. Debug
- c. Event
- d. Script

20) one or more Scratch blocks connected together to form a sequence

- a. Script
- b. Broadcast
- c. Parallelism
- d. Debug

**ANSWER KEY.**

- 1) Output
- 2) False
- 3) Headphones
- 4) Keyboard
- 5) Microphone
- 6) Mouse
- 7) Display
- 8) Mouse
- 9) Input
- 10) Mouse, keyboard, scanner
- 11) A
- 12) D
- 13) D
- 14) A
- 15) D
- 16) B
- 17) A
- 18) A
- 19) A
- 20) A



# PREMIER GENIE

— FORMULA FOR SUCCESS —



## DUBAI STEM OLYMPIAD

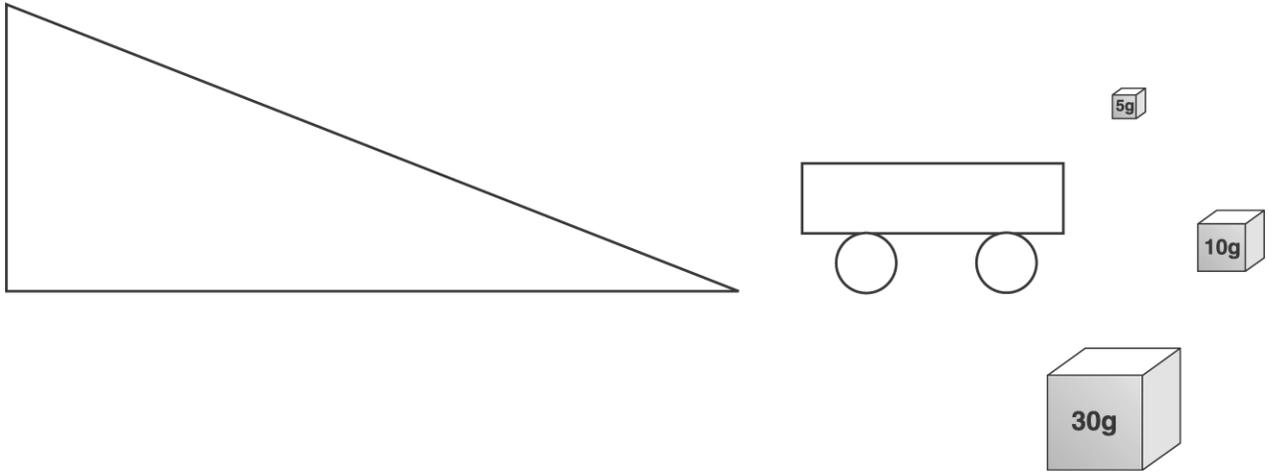
2022

Junior Category

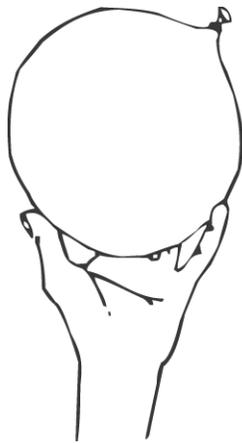
Science - Sample Paper

1. What are the building blocks of all matter?
  - A. potential and kinetic energy
  - B. heat and electricity
  - C. atoms and molecules
  - D. crystals and compounds
  
2. All of the following except one are made up of atoms. Which one is NOT made up of atoms?
  - A. energy
  - B. people
  - C. gasoline
  - D. sodium chloride
  
3. Which is an example of a physical change?
  - A. burning leaves
  - B. baking bread
  - C. rusting pipes
  - D. tearing paper

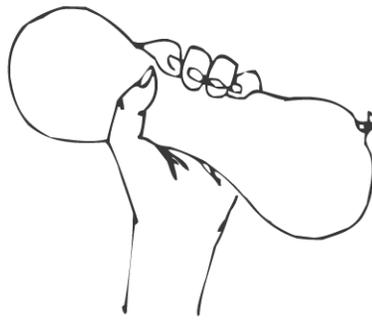
Use the diagram below to answer question 4



4. John measured the time it took for the cart to roll to the bottom of the ramp. He did this with an empty cart and again with different-sized blocks in the cart. What question is John trying to answer with this experiment?
- A. Which block weighs more?
  - B. Which block has more gravity?
  - C. How does weight change the speed of the cart?
  - D. How long does it take for the cart to get to the bottom?



**Picture A**

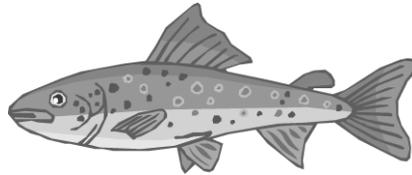


**Picture B**

5. In Picture A, a boy is holding a balloon. No air can get out of the balloon. He squeezes the balloon so that it is thinner, as shown in Picture B. Which statement is correct?
- A. The balloon is thinner because it lost mass.
  - B. The balloon is longer because it gained mass.
  - C. The balloon is lighter because it lost mass.
  - D. The mass of the balloon stayed the same.
6. The Sun's gravity holds each planet in its orbit. Pluto is farther away from the Sun than Earth is. How does the effect of the Sun's gravity on Pluto compare with the effect of the Sun's gravity on Earth?
- A. The Sun has the same gravitational pull on all planets that are in orbit.
  - B. The Sun has more gravitational pull on Pluto because it is smaller.
  - C. The Sun has less gravitational pull on Earth because it is closer.
  - D. The Sun has less gravitational pull on Pluto because it is farther away.
7. If an object is dropped from an airplane, it will fall to the ground. The force that causes the object to fall is
- A. mass.
  - B. gravity.
  - C. friction.
  - D. weight.

8. Two objects have collected static electricity with the same charge. What would the objects do when placed near each other?
- A. repel
  - B. attract
  - C. nothing
  - D. stick together
9. When performing an experiment with electricity, which material would act as an insulator?
- A. staple
  - B. popsicle stick
  - C. wire
  - D. paper clip
10. What will happen if you add more batteries to an electrical circuit containing light bulbs?
- A. There is no change.
  - B. The bulbs will dim.
  - C. The bulbs will be brighter.
  - D. The bulbs will last longer.
11. Ken wanted to make a light bulb glow. Which set of materials would he need?
- A. paper cup, paper clip, and a popsicle stick
  - B. D-cell battery, wire, and a light bulb
  - C. button, D-cell battery, and a rubber glove
  - D. D-cell battery, paper, and a bulb
12. The organ that holds solid waste materials before they are passed from the body is the
- A. pancreas.
  - B. liver.
  - C. stomach.
  - D. large intestine.

Use the picture below to answer question 13



13. A fish is dark on the top and light on the bottom because
- A. the colors help the fish swim better.
  - B. the sun makes the top part of the fish turn dark.
  - C. the colors make the fish harder for a predator to see.
  - D. the colors keep the fish from turning upside down.
14. Which describes a change that takes place when a chocolate bar melts?
- A. Solid becomes a gas.
  - B. Liquid becomes a gas.
  - C. Solid becomes a liquid.
  - D. Liquid becomes a solid.
15. Which form of electric discharge appears in nature?
- A. rain
  - B. ocean currents
  - C. lightning
  - D. volcanoes
16. The organ that holds solid waste materials before they are passed from the body is the
- A. pancreas.
  - B. liver.
  - C. stomach.
  - D. large intestine

17. All of the following except one are made up of atoms. Which one is NOT made up of atoms?
- A. energy
  - B. people
  - C. gasoline
  - D. sodium chloride
18. Bread placed in a toaster turns brown then black if left too long. What is needed for this chemical change to take place?
- A. Heat energy to be added
  - B. Heat energy to be taken away
  - C. A certain amount of time had to pass
  - D. The bread had to be taken out of the wrapper
19. A student watches an ice cube melt into a puddle of water. Has a chemical reaction taken place?
- A. Yes, a gas has been given off
  - B. Yes, the color has changed
  - C. No, water doesn't react chemically
  - D. No, no new substances have been formed
20. Why would a comb that had been run through hair touch one cheerio and cause the two Cheerios to come together? The comb had
- A. a negative charge.
  - B. a positive charge.
  - C. a different charge than the Cheerios already had.
  - D. the same charge as the Cheerios already had

## Answer Key

- 1) C |
- 2) A
- 3) D
- 4) C
- 5) D
- 6) D
- 7) B
- 8) A
- 9) B
- 10) C
- 11) B
- 12) D
- 13) C
- 14) C
- 15) C
- 16) D
- 17) A
- 18) A
- 19) D
- 20) C