ICATS MATHEMATICS CONTEST 2019

QUESTION BOOKLET

GRADE 9 & 10 ADOLESCENTS

Time Allowed: 90 Mins.
Maximum Marks: 90

ICATS International CATS Contests
An Assessment Center

INTERNATIONAL
CATS CONTESTS
COMPETENCE & APTITUDE TESTING SERVICES
FASTEST GROWING CONTESTS IN PAKISTAN

ICATS MATHEMATICS CONTEST 2019

ADOLESCENTS (GRADE 9 & 10)

TIME ALLOWED : 90 MINUTES, MAXIMUM MARKS : 90
TOTAL QUESTIONS : 30 MCQS

INSTRUCTIONS

1. DON'T START ATTEMPTING THE PAPER UNTIL INSTRUCTED BY THE INVIGILATORS.
2. INSTRUCTIONS FROM THE EXAMINATION INVIGILATORS MUST BE CARRIED OUT PROMPTLY.
3. CAREFULLY RECHECK YOUR NAME, FATHER NAME, SCHOOL NAME, ADDRESS ETC AT THE BUBBLE SHEET / ANSWER SHEET.
4. RECORD ALL ANSWERS ON THE BUBBLE SHEET ONLY. SELECT BEST ANSWER FROM THE FOUR GIVEN OPTIONS AND MARK ONLY ONE OPTION IN EACH QUESTION.
5. USE BLUE / BLACK INK TO FILL UP THE CIRCLES FOR YOUR ANSWERS ON THE BUBBLE SHEET. USE OF LEAD PENCIL IS NOT ALLOWED.
6. USE OF ANY HELPING MATERIAL INCLUDING CELL PHONES AND ELECTRONIC DEVICES IS STRICTLY PROHIBITED.
7. EVERY CORRECT ANSWER EARNS THREE POINTS. THERE WOULD BE NEGATIVE MARKING. ONE POINT WOULD BE DEDUCTED FOR EVERY INCORRECT ANSWER.
8. CANDIDATES MAY NOT LEAVE THE EXAMINATION ROOM UNESCORTED FOR ANY REASON, AND THIS INCLUDES USING THE WASHROOM.
9. NO MATERIALS OR ELECTRONIC DEVICES SHALL BE BROUGHT INTO THE ROOM.
10. THERE ARE FIVE CATEGORIES OF THE CONTEST AS UNDER:
    - A. TODDLERS (GRADE 1 & 2)
    - B. KIDS (GRADE 3 & 4)
    - C. JUNIORS (GRADE 5 & 6)
    - D. JUVENILES (GRADE 7 & 8)
    - E. ADOLESCENTS (GRADE 9 & 10 / O-LEVELS)
11. ONLY REGISTERED STUDENTS CAN PARTICIPATE IN THE CONTEST.
12. NO CANDIDATE SHALL TAKE OUT OF THE HALL ANY ANSWER BOOK(S) OR PART OF AN ANSWER BOOK, WHETHER USED OR UNUSED, OR OTHER SUPPLIED MATERIAL.
13. IF A PARTICIPANT DOES NOT UNDERSTAND A WORD OR PHRASE ON THE EXAM PAPER, NEITHER EXAMINER NOR INVIGILATOR IS PERMITTED TO ANSWER.
14. FOR INFORMATION ABOUT UPCOMING CONTESTS OR PROVIDING VALUABLE FEEDBACK, PLEASE VISIT WWW.CATSCONTESTS.ORG
15. ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO INTERNATIONAL CATS CONTESTS AT INFO@CATSCONTESTS.ORG

Q1. **Pam wants to buy a suitcase. The order form she uses is shown below.**

SUITCASE ORDER FORM

Colors available (choose one):	**__Tan __Blue __Green __Black __Red**
Sizes available:	**__Small __Medium __Large**
Material:	**__Leather __Nylon**

How many different combinations of color, size, and material are possible for Pam's suitcase?

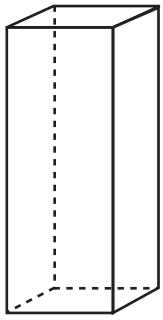
A 10 **B** 15 **C** 24 **D** 30

Q2. **Tony began putting together a rectangular puzzle. He completed the top edge and left edge of the puzzle, as shown below. Each piece is a square that has a side length of 2 ½ centimeters.**

What is the total area, in square centimeters, of the completed puzzle?

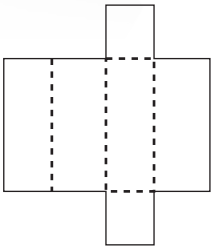
A 62 ½ **B** 262 ½ **C** 2062 ½ **D** 2262 ½

Q3. **A rectangular prism is shown below**

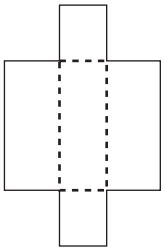


Which figure represents the net of the rectangular prism?

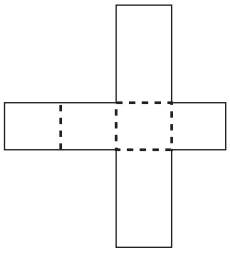
A



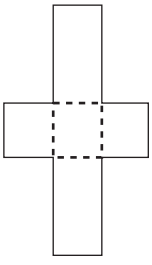
B



C



D



Q4. **A group of students organized a car wash to raise money for a local charity. The students charged $5.00 for each car they washed. In 3 hours, they washed 12 cars. At that rate, how much money could they earn from washing cars for eight hours?**

A $40.00 **B** $60.00 **C** $85.00 **D** $160.00

Q5. **Madison and Pedro each created a number pattern that began with the number 0.**

Madison used the rule "Add 4."

Pedro used the rule "Add 12."

Which statement is true about each corresponding pair of numbers in the two patterns?

A Each number in Pedro's pattern is 8 less than the corresponding number in Madison's pattern.

B Each number in Pedro's pattern is 8 more than the corresponding number in Madison's pattern.

C Each number in Pedro's pattern is 3 times less than the corresponding number in Madison's pattern.

D Each number in Pedro's pattern is 3 times more than the corresponding number in Madison's pattern.

Q6. **A museum has an aquarium in the shape of a right rectangular prism that is 22.9 meters long, 7.5 meters wide, and 4.6 meters high. What is the volume, rounded to the nearest cubic meter, of the aquarium?**

A 280 **B** 623 **C** 790 **D** 1,288

Q7. **Travis, Jessica, and Robin are collecting donations for the school band. Travis wants to collect 20% more than Jessica, and Robin wants to collect 35% more than Travis. If the students meet their goals and Travis collects $43, how much money did they collect in all?**

A $106.78 **B** $128.60 **C** $136.88 **D** $144.99

Q8. **Ben earns $9 per hour and $6 for each delivery he makes. He wants to earn more than $155 in an 8-hour workday. What is the least number of deliveries he must make to reach his goal?**

A 11 **B** 12 **C** 13 **D** 14

Q9. **Malika and Adrian prepared containers of potato salad at a deli. Each container was supposed to have a mass of one pound. The manager selected a random sample of containers prepared by each employee to check the mass of each container. The results are shown in the table below.**

MASS OF EACH CONTAINER

Malika's Containers (pounds)	Adrian's Containers (pounds)
1.10	1.30
1.08	1.21
1.05	0.79
0.95	0.90
0.98	0.88

Which inference is best supported by these data?

A Malika will produce more containers with a mass of exactly one pound than Adrian will.

B Adrian will produce more containers with a mass of exactly one pound than Malika will.

C Most of Malika's containers will have a mass closer to one pound than most of Adrian's containers.

D Most of Adrian's containers will have a mass closer to one pound than most of Malika's containers.

Q10. **Travis is three times as old as Anne. Mary is three years older than Travis. If Mary is 39 years old, how old is Anne?**

A 12 years old **B** 13 years old **C** 14 years old **D** 16 years old

Q11. **Extreme View Helicopter Tours flew 34 times on Friday. They flew the same number of times on Saturday as they did on Sunday. The total number of times they flew for the three days was 118. How many times did Extreme View Helicopter Tours fly on Saturday?**

A 34 **B** 42 **C** 59 **D** 84

Q12. **The table below shows the prices of different numbers of cards on a web site.**

COST OF CARDS

Number of Cards	Price (dollars)
20	13
40	26
60	39
100	65

For each order, the web site applies a 7.7% sales tax to the price of the cards, plus a one-time mailing fee of $5.95. Based on the information in the table, what will be the total cost for an order for 280 cards?

A 111.85 **B** 122.15 **C** 201.96 **D** 301.96

Q13. **A scientist uses a submarine to study ocean life.**

She begins at sea level, which is at an elevation of 0 feet.
She travels straight down for 90 seconds at a speed of 3.5 feet per second.
She then travels directly up for 30 seconds at a speed of 2.2 feet per second.

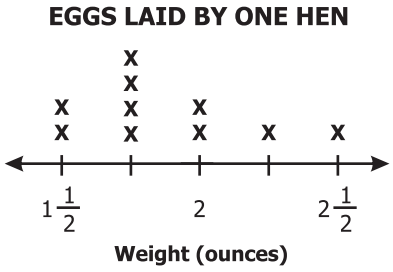
After this 120-second period, how much time, in seconds, will it take for the scientist to travel back to sea level at the submarine's maximum speed of 4.8 feet per second? Round your answer to the nearest tenth of a second.

A 41.9 **B** 46.9 **C** 51.9 **D** 56.9

Q14. **Jenny wants to rent a truck for one day. She contacted two companies. Laguna's Truck Rentals charges $20 plus $2 per mile. Salvatori's Truck Rentals charges $3 per mile. After how many miles will the total cost for both companies be the same?**

A 4 **B** 6 **C** 20 **D** 60

Q15. **The line plot shows the weights of ten eggs laid by one hen.**



What is the total weight, in ounces, of the four heaviest eggs?

A 4 **B** 7 **C** $8\frac{1}{2}$ **D** $8\frac{3}{4}$

Q16. **In a math game, a player chooses two numbers, as described below.**

First number: a mixed number between 2 and 10
Second number: 1, 2, 3, 4, or 5

Which statement describes the product of the two numbers a player chooses?

A The product must be a whole number less than the second number.
B The product must be a value less than the second number.
C The product must be a whole number greater than the second number.
D The product must be a value greater than the second number.

Q17. **Jason has a coupon for $2.50 off any electronic book from an online book store. If the original price, in dollars, of an electronic book is p and the discounted price, in dollars, is d, which table shows the relationship between p and d?**

A

p	3.00	4.00	5.00	6.00
d	0.50	1.50	2.50	3.50

B

p	3.00	4.00	5.00	6.00
d	5.50	6.50	7.50	8.50

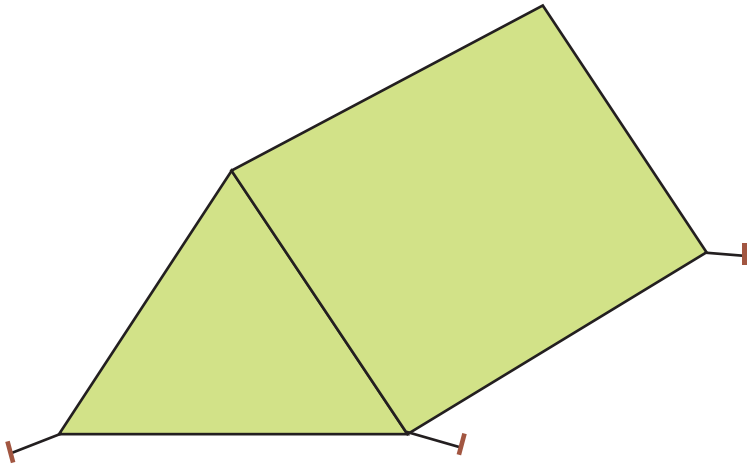
C

p	3.00	4.00	5.00	6.00
d	2.50	2.50	2.50	2.50

D

p	3.00	4.00	5.00	6.00
d	7.50	10.50	12.50	15.50

Q18. **Richard's tent is a triangular prism, as shown below.**



Which combination of shapes makes up the bases and faces of Richard's tent?

A 2 triangles, 2 rectangles

B 2 triangles, 3 rectangles

C 3 triangles, 2 rectangles

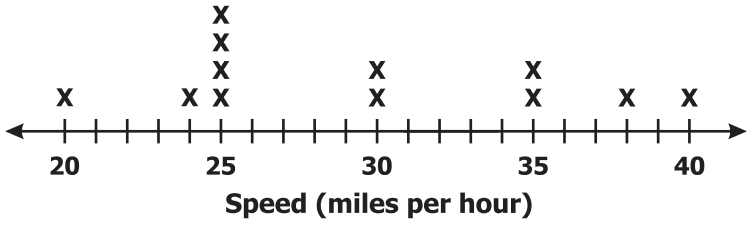
D 3 triangles, 3 rectangles

Q19. **Darnell's car used 8 gallons of gasoline to travel 340 miles. After a mechanic worked on the car, it used 7 gallons of gasoline to travel 350 miles. If the price of gasoline was approximately $4.00 per gallon, how much less, to the nearest cent per mile, did it cost to run the car after the mechanic worked on it?**

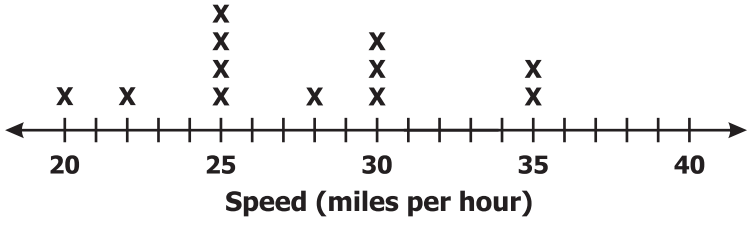
A 1 Cent **B** 2 Cents **C** 3 Cents **D** 4 Cents

Q20. **An electronic sign that showed the speed of motorists was installed on a road. The line plots below show the speeds of some motorists before and after the sign was installed.**

BEFORE SIGN INSTALLATION



AFTER SIGN INSTALLATION



Based on these data, which statement is true about the speeds of motorists after the sign was installed?

A The mean speed and the range of the speeds of the motorists decreased.

B The median speed and the range of the speeds of the motorists increased.

C The mean speed of the motorists decreased and the range of the speeds increased.

D The median speed of the motorists increased and the range of the speeds decreased.

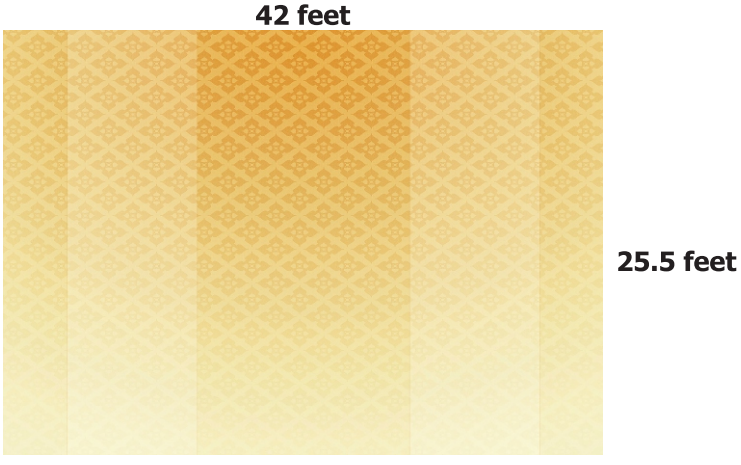
Q21. **A clothing store used the sign shown below to advertise a discount on shirts.**

DISCOUNT
Buy Two Shirts
Get 50% Off Third Shirt

Jillani wants to buy three shirts, which were originally priced $49.96 each. The store will discount the price of the third shirt and then apply a 7.1% tax to the total cost of all three shirts. Including the tax, what will be the mean (average) cost of each shirt?

A $41.99 **B** $42.70 **C** $44.59 **D** $45.18

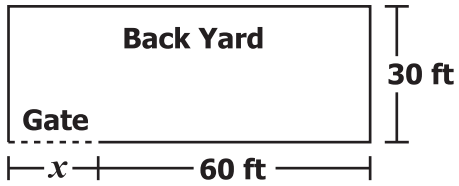
Q22. **Wallpaper was applied to one rectangular wall of a large room. The dimensions of the wall are shown below.**



If the total cost of the wallpaper was $771.12, what was the cost, in dollars, of the wallpaper per square foot?

A $0.61 **B** $0.72 **C** $1.39 **D** $1.65

Q23. When Keisha installed a fence along the 200-foot perimeter of her rectangular back yard, she left an opening for a gate. In the diagram below, she used x to represent the length, in feet, of the gate.



What is the value of x?

A 10 **B** 20 **C** 25 **D** 30

Q24. Last year 950 people attended a town's annual parade. This year 1,520 people attended. What was the percent increase in attendance from last year to this year?

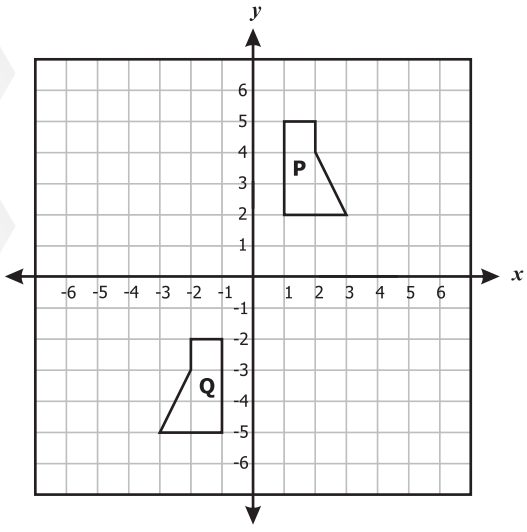
A 37.5% **B** 57.0% **C** 60.0% **D** 62.5%

Q25. Mr. Thosmen is buying two types of gift cards to give as prizes to employees at a company meeting. He will buy restaurant gift cards that each cost $50. He will also buy movie theater gift cards that each cost $20. He has $450 to buy a total of 15 gift cards.

How many of each type of gift card can Mr. Thomsen buy?

A He can buy 5 restaurant gift cards and 10 movie theater gift cards.
B He can buy 8 restaurant gift cards and 7 movie theater gift cards.
C He can buy 10 restaurant gift cards and 5 movie theater gift cards.
D He can buy 12 restaurant gift cards and 3 movie theater gift cards.

Q26. **Pentagon P and pentagon Q, shown below, are congruent.**



Which sequence could be used to transform pentagon P to pentagon Q?

A a 180° clockwise rotation about the origin

B a translation four units left and then a reflection over the x-axis

C a reflection over the y-axis and then a translation seven units down

D a translation seven units down and then a 90° clockwise rotation about the origin

Q27. **Tina bought some gum. The number of pieces of each flavor of gum she bought is shown below.**

What percent of the total number of pieces of gum are peppermint flavor?

GUM TINA BOUGHT

Flavor of Gum	Number of Pieces
Grape	40
Cherry	40
Peppermint	20
TOTAL	**100**

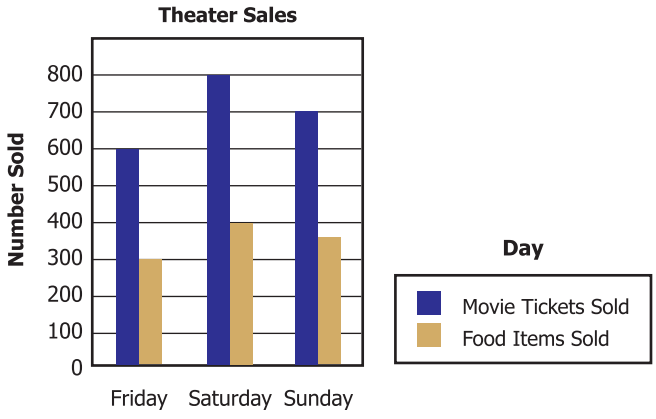
A 20%

B 60%

C 40%

D 80%

Q28. **Andrea works at a movie theater. She made the graph below to compare the number of movie tickets with the number of food items that were sold during three days.**



How many more movie tickets were sold on Saturday than on Friday?

A 100 **B** 200 **C** 300 **D** 400

Q29. **As students entered a concert, a key chain was given to every second student in line. T-shirts were given to every third student in line. Which student in line was the first to receive both a key chain and a T-shirt?**

A 5th **B** 6th **C** 8th **D** 9th

Q30. **When the number square below is completed, any three numbers in a line will add up to 24. The three numbers can be added across, up, down, or diagonally.**

What number belongs in Box A?

6		2
A	8	
	0	10

A 4 **B** 9

C 14 **D** 16

National Toppers ICATS Science Contest 2018

Congratulations

Student Name	Father Name	Grade	School
ALI RIAZ	RIAZ AHMAD	1	BEACONHOUSE SCHOOL SYSTEM (PRIMARY CAMPUS)
FILZA ALI	ALI RAZA	2	ARMY PUBLIC SCHOOL COD
M. ZARAR HAIDER	FAHEEM HASSAN	3	MEEZAN SCHOOL (MAIN CAMPUS)
IMAD AHMAD	BAHARUDDIN	4	ARMY PUBLIC SCHOOL & COLLEGE SWAT
WANIA ALI	SAFDAR ALI	4	LAHORE GRAMMAR SCHOOL (LANDMARK PROJECT)
QASIM RASOOL	FAIZ UR RASOOL	4	ARMY BURN HALL COLLEGE FOR GIRLS
M. RAFFAY KUNDI	AFIF NASEER KUNDI	5	THE SCIENCE SCHOOL
AYESHA JUNAID	MUHAMMD JUNAID	5	LAHORE GRAMMAR SCHOOL
ARYAN HASSAN	AFARASAYAB HASSAN	5	THE CITY JUNIOR SECTION CANAL
TAHER MURTAZA	MURTAZA BHINDERWALA	6	MSB EDUCATIONAL INSTITUTE
AREEJ AMIR	AMIR MASOOD	7	KARACHI PUBLIC SCHOOL
MUHAMMAD ALI	MUHAMMAD NAVEED	8	THE SCIENCE SCHOOL
ZOIBA RIAZ	RIAZ HUSSAIN	9	THE CITY SCHOOL RAHIM YAR KHAN
WAJAHAT MIRZA	ARIF MEHMOOD	10	KOHINOOR GRAMMAR SCHOOL & COLLEGE

National Toppers ICATS IT Contest 2018

Congratulations

Student Name	Father Name	Grade	School
NOOR FATIMA	IMRAN ALI	1	HALIMAH SCHOOL OF EXCELLENCE
MUHAMMAD AFAQ	TAYYAB GHAFFAR	2	MEEZAN SCHOOL (CITY CAMPUS)
UMAR YOUSAF	MUHAMMAD YOUSAF	3	ARMY PUBLIC SCHOOL GARRISON JUNIOR LAHORE CANTT
AAN ZAHRA RANA	RANA	3	ARMY PUBLIC SCHOOL (GIRLS BRANCH)
RIDA YASIR	M. YASIR SALEEM	4	THE CITY SCHOOL (GULSHAN JUNIOR CAMPUS)
MUHAMMAD HAMIZ	MUHAMMAD ADIL	5	Al-QALAM GRAMMAR SCHOOL HAJIWALA
WAJAHAT ALI SHAFIQ	MUHAMMAD SHAFIQ	6	QUAID E AZAM DIVISIONAL PUBLIC SCHOOL
NASHRAH	SHEHZAD	7	GUARDS PUBLIC SCHOOL
ANEES HAMID	HAMID BASHIR	8	PAK TURK INTERNATIONAL SCHOOL AND COLLEGE
LAIBA GABOL	SALEEM GABOL	9	HABIB GIRLS' SCHOOL
AHMED ALI	M . AUN	10	MSB EDUCATIONAL INSTITUTE

Compete
if you are the best

www.catscontests.org