



# ICATS MATHEMATICS CONTEST 2019



**QUESTION BOOKLET**

**GRADE 7 & 8  
JUVENILES**

*Time Allowed: 90 Mins.  
Maximum Marks: 90*



**INTERNATIONAL  
CATS CONTESTS**  
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## **ICATS MATHEMATICS CONTEST 2019 JUVENILES (GRADE 7 & 8)**

**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](http://WWW.CATSCONTESTS.ORG)
15. ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO INTERNATIONAL CATS CONTESTS AT [INFO@CATSCONTESTS.ORG](mailto:INFO@CATSCONTESTS.ORG)

- Q1.** Paula went shopping and spent a total of \$92.00. She bought 1 pair of sunglasses, 2 hats, and 4 shirts.

PAULA'S SHOPPING TRIP

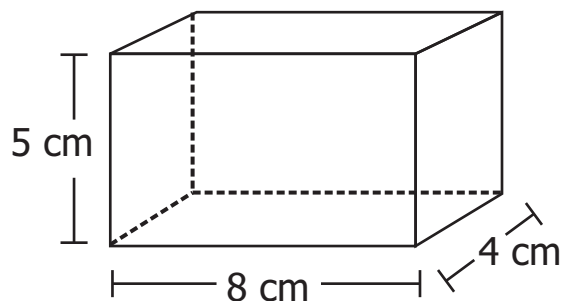
Type of Item	Number Bought	Price	Total Cost
Sunglasses	1	?	
Hat	2	\$12.00 each	
Shirt	4	\$15.00 each	
TOTAL SPENT			\$92.00

The sum of the Total Costs for the 3 types of items should add up to \$92.00. What is the price of the sunglasses.

- A** \$8                      **B** \$12                      **C** \$15                      **D** \$92



- Q2.** Juliette made the jewelry box shown below. The jewelry box was shaped like a right rectangular prism.



What was the volume, in cubic centimeters, of the jewelry box?

- A** 17                      **B** 37                      **C** 160                      **D** 184

**Q3.** The fifth-grade classes at Brookfield School used five identical buses to go on a field trip.

There were a total of 40 seats on each bus.

All of the seats on four buses were filled.

The fifth bus had  $\frac{4}{5}$  of the seats filled.

$\frac{1}{8}$  of all the passengers on the buses were adults.

How many adults went on the field trip with the fifth-grade classes?

**A** 20

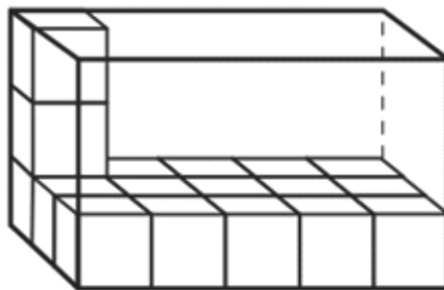
**B** 24

**C** 25

**D** 32



**Q4.** Rashad is filling a toy box with wooden blocks that are each a unit cube in size. He filled the bottom layer of a toy box with 15 wooden blocks. He then stacked two more wooden blocks on top of the bottom layer. The partially filled toy box is shown below. What was the total volume, in cubic units, of the toy box?



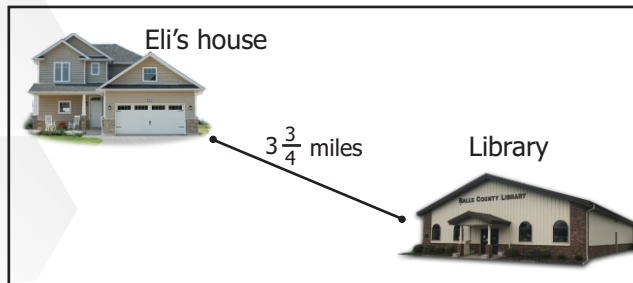
**A** 15

**B** 17

**C** 30

**D** 45

- Q5.** Eli lives  $3\frac{3}{4}$  miles from the library.



He decided to bike from his home to the library to return some book. Eli biked  $1\frac{1}{10}$  miles when he remembered that he had left a book at home, so he biked back home to get it. After getting the book from home, he biked to the library. What was the total distance, in miles. Eli had biked when he finally reached the library?

- A**  $1\frac{4}{5}$       **B**  $2\frac{2}{5}$       **C**  $3\frac{19}{20}$       **D**  $5\frac{19}{20}$



- Q6.** There are 12 players on a new softball team. Before the team starts playing games, the team must pay a total registration fee of \$572. Along with the registration fee, the team will also need to spend a total of \$1,240 on equipment.

To pay for the cost of the registration fee and the equipment, the players held a car wash and raised \$786. They then decided to sell candles for \$9.50 per candle to cover the remaining costs. If each player sells the same number of candles, how many candles must each player sell?

- A** 5      **B** 7      **C** 9      **D** 11

**Q7.** Arnold's entire workout consisted of 10 minutes of warm-up exercises, 25 minutes of lifting weights, and 15 minutes on the treadmill. What was the ratio of the number of minutes he lifted weights to the total number of minutes of his entire workout?

**A** 1 : 1

**B** 1 : 2

**C** 3 : 10

**D** 5 : 8



**Q8.** A punch recipe requires 2 cups of cranberry juice to make 3 gallons of punch. Using the same recipe, what is the amount of cranberry juice needed for 1 gallon of punch?

**A** 3 cups

**B**  $1\frac{1}{2}$  cups

**C** 1 cup

**D**  $\frac{2}{3}$  cup



**Q9.** The points plotted on the coordinate grid below show different locations in a city. The grid lines represent the city's streets.

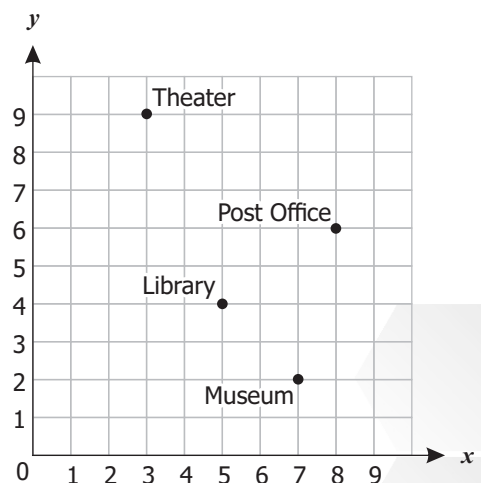
The city plans to build a parking lot at the location represented by the coordinates  $(8, 4)$ . Which building is the shortest driving distance from the parking lot?

**A** theater

**B** library

**C** museum

**D** post office



**Q10.** A company paid \$48 for 2 cases of printer paper. Each case contained 12 packages of paper. Next month the company's office manager needs to order 180 packages of the same paper. If the price per package does not change, what would be the total cost of next month's order?

**A** \$90

**B** \$360

**C** \$720

**D** \$1,140

**Q11.** The picture below shows the five houses on Maple Street and the five houses on Oak Street.

6 Maple St.



Maple St.

4 Oak St.



Oak St.

Each house number on Maple Street is six more than the house number to its left.

Each house number on Oak Street is eight more than the house number to its left.

How much greater is the house number of the last house on Oak Street than the house number of the last house on Maple Street?

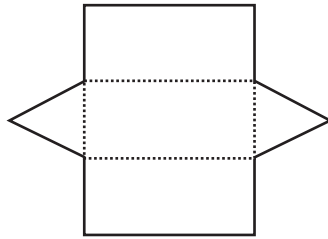
**A** 2

**B** 6

**C** 8

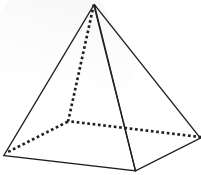
**D** 10

**Q12.** The net below represents a three-dimensional object.

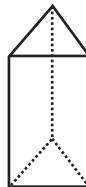


Which three-dimensional object can be formed from the net?

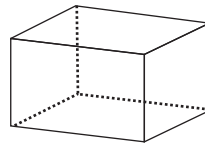
**A**



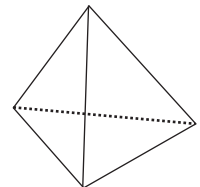
**B**



**C**



**D**



**Q13.** Keith wants to plot  $-8$  and  $-9$  on a number line. Which statement is true?

**A** Keith should plot  $-8$  to the left of  $-9$  because  $-8 < -9$ .

**B** Keith should plot  $-8$  to the left of  $-9$  because  $-8 > -9$ .

**C** Keith should plot  $-9$  to the left of  $-8$  because  $-9 < -8$ .

**D** Keith should plot  $-9$  to the left of  $-8$  because  $-9 > -8$ .

**Q14.** Yesterday, the temperature at noon was  $11.4^\circ\text{F}$ . By midnight, the temperature had decreased by  $15.7$  degrees. What was the temperature at midnight?

**A**  $-4.3^\circ\text{F}$

**B**  $-11.4^\circ\text{F}$

**C**  $-15.7^\circ\text{F}$

**D**  $-27.1^\circ\text{F}$



- Q15.** A biologist counted the number of two types of salmon (Chinook and Steelhead) at a dam. He used the table below to record the number of salmon on different days. On day 5, the biologist counted 16 Chinook. If the ratio of Chinook to Steelhead remained the same as on the previous four days, how many Steelhead should the biologist expect to count on day 5?

NUMBER OF SALMON TYPES COUNTED

Day	Chinook	Steelhead
1	4	10
2	12	30
3	8	20
4	6	15
5	16	

**A** 20

**B** 36

**C** 40

**D** 48

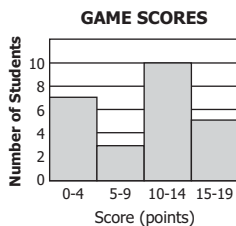
- Q16.** Jared surveyed the students in his class to determine how they scored in a game. He displayed his results in the table shown below.

GAME SCORES

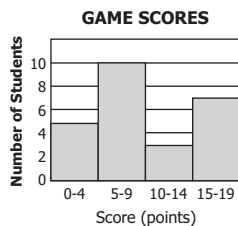
Score (points)	Number of Students
0 to 4	5
5 to 9	10
10 to 14	3
15 to 19	7

Which histogram represents the data in the table?

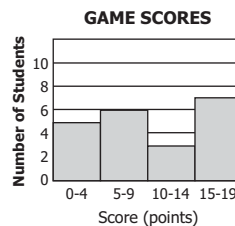
**A**



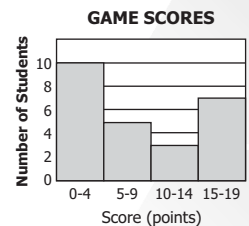
**B**



**C**



**D**



**Q17.** During a sale, a store offered a 40% discount on a particular camera that was originally priced at \$450. After the sale, the discounted price of the camera was increased by 40%. What was the price of the camera after this increase?

**A** \$252

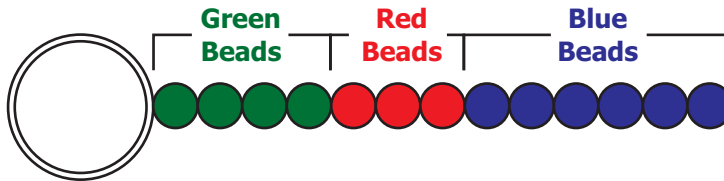
**B** \$360

**C** \$378

**D** \$450

**Q18.** Sharon wants to make key chains with different-colored beads, as shown below.

**KEY CHAIN**



Each key chain will look the same. Sharon will use a total of 20 green beads to make all her key chains. What is the number of red beads and the number of blue beads she will need to make all of the key chains?

**A** 6 Red and 12 Blue

**B** 9 Red and 18 Blue

**C** 12 Red and 24 Blue

**D** 15 Red and 30 Blue

**Q19.** Josh went to the carnival with \$12.24. It cost him \$5.00 for admission and \$0.75 for each ride. Josh bought one drink for \$1.25, and he rode as many rides as he could afford. If Josh did not buy anything else, how much money did he have when he left the carnival?

**A** \$0.01

**B** \$0.24

**C** \$0.49

**D** \$0.74

- Q20.** The sign below is located at the start of Pinecone Trail and shows the distances from the sign to different points of interest along the trail.

Pinecone Trail	
Nature Center	$1\frac{1}{2}$ miles
Giant Boulder	$4\frac{1}{4}$ miles
Lookout Point	$8\frac{3}{4}$ miles

Sage hiked from the start of the trail to Lookout Point. She then hiked back to Giant Boulder to camp for the night. What was the total distance, in miles, that Sage hiked?

- A**  $21\frac{3}{4}$       **B**  $13\frac{1}{4}$       **C**  $4\frac{1}{2}$       **D**  $4\frac{1}{4}$

- Q21.** Which kind of numbers, when multiplied together, have a product that is an odd number?

- A** even x even x even      **B** even x even x odd  
**C** odd x odd x even      **D** odd x odd x odd

- Q22.** A scientist studied the migration patterns of two types of whales.

The humpback whales traveled 2,240 miles in 28 days.  
The gray whales traveled 2,368 miles in 32 days.

If the humpback whales had traveled at the same rate for 32 days, how many more miles would they have traveled than the gray whales?

- A** 128      **B** 192      **C** 280      **D** 408

- Q23.** The table below shows different possibilities for the number of games a team would need to win to maintain a certain percentage of wins.

**POSSIBLE BASEBALL  
GAMES WON**

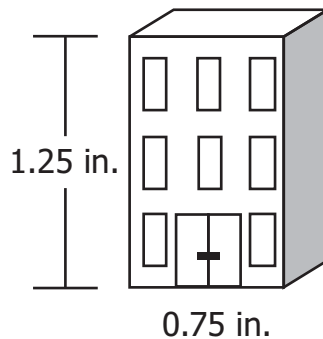
Number of Games Won	Number of Games Played
6	10
24	40
36	60
42	70

Which ratio the number of games won to the number of games played could also be included in this table?

- A** 18 : 20      **B** 30 : 20      **C** 18 : 30      **D** 50 : 30



- Q24.** The drawing of a building, shown below, has a scale of 1 inch to 30 feet.



What is the actual height, in feet, of the building?

- A** 22.5      **B** 24      **C** 37.5      **D** 40

**Q25.** A trailer will be used to transport several 40-kilogram crates to a store. The greatest amount of weight that can be loaded onto the trailer is 1,050 kilograms. An 82-kilograms crate has already been loaded onto the trailer. What is the greatest number of 40-kilogram crates that can also be loaded onto the trailer?

**A** 24

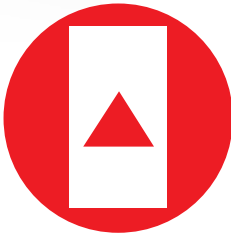
**B** 25

**C** 26

**D** 27

**Q26.** Kendra drew a circle. Inside the circle she drew a triangle. Inside the triangle she drew a square. Which design did Kendra draw?

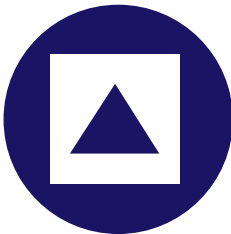
**A**



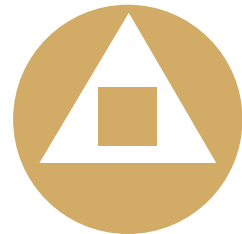
**B**



**C**



**D**



**Q27.** What is the missing number in the pattern below?

2	6	18	54	?	486
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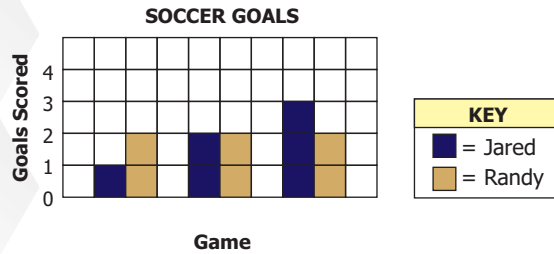
**A** 72

**B** 90

**C** 108

**D** 162

- Q28.** Jared and Randy played in three soccer games. The graph below shows the number of goals they scored in each game.



Which statement is true about Jared's and Randy's goals?

- A** Jared always scored more goals than Randy.
- B** Randy always scored more goals than Jared.
- C** The number of goals Jared scored increased each game.
- D** The number of goals Randy scored increased each game.



- Q29.** Tina is making a scale model of a monument that is 155 feet tall. She uses a scale of 1 inch = 5 feet. How tall should Tina make her model?

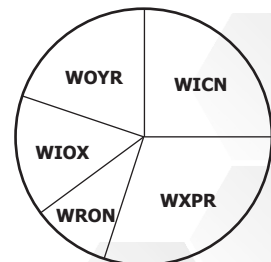
- A** 5 inches
- B** 8 inches
- C** 13 inches
- D** 31 inches



- Q30.** The circle graph below shows the favorite radio stations of the students in Julie's school.

Julie's teacher asks her to estimate what percent of the students chose WXPR. Which best represents the percent of students who chose WXPR?

RADIO STATION SURVEY



- A** 10%
- B** 25%
- C** 30%
- D** 45%

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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  
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*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