

Institutional Mathematics Entrance Exam Guide



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Institutional Mathematics Exam

Instructions

The RIT Kosovo™ (A.U.K) Math exam contains 20 multiple choice questions which attempt to test the followings:

- **Basic skills-** performing a sequence of basic operations
- **Applications-** applying sequences of basic operations to novel settings or in complex ways
- **Analysis-** demonstrating conceptual understanding of basic operations of principles and relationships in mathematical operations.

Each question in the exam is worth 5 points, resulting in a total of 100 points. There are no punishments for incorrect answers. As such, the placement of the students based on their math performance is as follows:

- **College Math:** 25 to 55 points
- **Interdisciplinary Math I :** 60 and above.

If, by mistake, a student has circled the wrong answer, he/she can cross it out (with an X) and circle the other one. There will be no punishments for such cases.

On the Exam Day

The exam starts sharp at **13:00** (unless specified differently) and ends at **14:30**. The exam lasts for one and a half hour.

Students are advised to arrive in the testing area, at least 15 minutes before the exam and bring an identification document with them (ID or Passport).

All the testing materials, the exam, several scratch papers, a calculator, and a pen, will be provided by the test administrator in the testing room.

Students must use the scratch papers provided, for practicing the results of the problems, and write down (circle) only the correct answers on the exam sheet.

All the cell phones and other electronic devices must be switched off and put in a convenient area during the exam. If your cell phone or other electronic device makes a noise, or you are seen using it at any time, you will be dismissed and your scores will be cancelled.

Any candidates caught cheating will be dismissed form the exam and their scores will be cancelled.

Mathematics entrance exam- version 1

Question 1

If x is $\frac{2}{3}$ of y and y is $\frac{3}{4}$ of z , what is the ratio of $x : z$?

- a) 1:2
- b) 1:1
- c) 2:1
- d) 3:2
- e) 4:3

Question 2

How many passengers can be seated on a plane with r rows, if each row consists of d double seats and t triple seats?

- a) rdt
- b) $rd + rt$
- c) $2dr + 3tr$
- d) $3dr + 2tr$
- e) $rd + t$

Question 3

$\$x$ is such that $\$x$ is equal to the largest integer less than x . What is the value of $\$6.99$ times $\$ - 2.01$?

- a) 18
- b) 12
- c) -12
- d) -18
- e) -21

Question 4

In a three-hour examination of 350 questions, there are 50 mathematical problems. If twice as much time should be allowed for each mathematical problem as for each of the other questions, how many minutes should be spent on the mathematical problems?

- a) 50
- b) 45
- c) 120
- d) 180
- e) 9

Question 5

If $2^m = 4x$ and $2^w = 8x$, what is m in terms of w ?

- a) $w - 1$
- b) $w + 1$
- c) $2w - 1$
- d) $2w + 1$
- e) w^2

Question 6

Which of the following is solution set of the given inequality $\frac{x-1}{3} \geq \frac{2x-3}{5}$?

- a) $x \in (-\infty, 4]$
- b) $x \in (4, +\infty)$
- c) $x \in (-\infty, +\infty)$
- d) $x \in (-4, 5]$
- e) $x \in [4, +\infty)$

Question 7

If the surface area of a cube is 384 cm^2 , then its volume will be:

- a) 721 cm^3
- b) 412 cm^3
- c) 512 cm^3
- d) 612 cm^3
- e) 500 cm^3

Question 8

If the average (or arithmetic mean) of 6 numbers is 4.5, what is the sum of the numbers?

- a.) 4.5
- b.) 24
- c.) 27
- d.) 30
- e.) cannot be determined

Question 9

Father is 28 years old, and his son is 6 years. After how many years the father will be two times older than the son?

- a) After 12 years
- b) After 18 years
- c) After 22 years
- d) After 18 years
- e) After 16 years

Question 10

The perimeter of a right angled triangle, with hypotenuse $c=101\text{cm}$ and one side $b=20\text{cm}$, is:

- a) 120 cm
- b) 220 cm
- c) 800 cm
- d) 400 cm
- e) 99 cm

Question 11

A manufacturer of boxes wants to make a profit of x dollars. When she sells 5,000 boxes it costs 5 cents a box to make the first 1,000 boxes and then it costs y cents a box to make the remaining 4,000 boxes. What price in dollars should she charge for the 5,000 boxes?

- a) $\$(5,000+1,000y)$
- b) $\$(5,000+1,000y+100x)$
- c) $\$(50+10y+x)$
- d) $\$(5,000+4,000y+x)$
- e) $\$(50+40y+x)$

Question 12

A horse can travel at the rate of 5 miles per hour for the first two hours of a trip. After the first two hours the horse's speed drops to 3 miles per hour. How many hours will it take the horse to travel 20 miles?

- a.) 4
- b.) 5
- c.) $5\frac{1}{3}$
- d.) $5\frac{1}{2}$
- e.) $5\frac{2}{3}$

Question 13

A worker is paid r dollars for each hour she works up to 8 hours a day. For any time worked over 8 hours she is paid at rate of $(1.5)r$ dollars an hour. The total amount of dollars the worker will earn if she works 11 hours in a day is?

- a) $(4.5)r$
- b) $(5.5)r$
- c) $(9.25)r$
- d) $(11)r$
- e) $(12.5)r$

Question 14

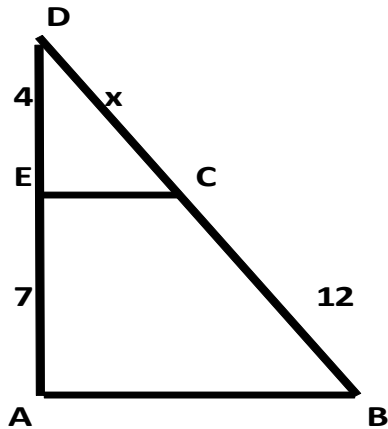
If $\frac{y}{x} = \frac{3}{2}$ then $\frac{x^2}{y^2}$ equals:

- a) $\frac{4}{9}$
- b) $\frac{2}{3}$
- c) $\frac{3}{2}$
- d) $\frac{9}{4}$
- e) $\frac{5}{2}$

Question 15

It takes Eric 20 minutes to inspect a car. Jane only needs 18 minutes to inspect a car. If they both start inspecting cars at 8:00 a.m., what is the first time they will finish inspecting a car at the same time?

- a) 9:30 a.m.
- b) 9:42 a.m.
- c) 10:00 a.m.
- d) 11:00 a.m.
- e) 2:00 p.m.



Question 16

Consider the triangle ABD. Find the values of x (that is, the distance CD)? Hint AB is parallel to EC.

- a) $48/7$
- b) 8
- c) $28/12$
- d) 16
- e) Cannot say

Use the following information to answer question 17, 18, and 19

Company	Annual Profit (\$)	Cost to Buy Company (\$)	Number of Employees
A	20,000	18,000	5
B	26,000	25,000	8
C	21,000	20,000	8
D	30,000	30,000	12

Question 17

Which company has the highest annual profit per employee?

- a) A
- b) B
- c) C
- d) D
- e) Cannot say

Question 18

If the profits per employee remain the same, how many extra employees would Company B have to recruit to achieve annual profits of \$39,000?

- a) 6
- b) 3
- c) 12
- d) 4
- e) Cannot say

Question 19

If every employee of Company D contributes equally, how much would each employee have to contribute in order to collectively buy Company A?

- a) 1500
- b) 1700
- c) 2700
- d) 2100
- e) Cannot say

Question 20

The ratio of red marbles to blue marbles is 5 to 7. If there are 156 marbles total, how many blue marbles are there?

- a) 65
- b) 100
- c) 91
- d) 78
- e) Cannot say

Mathematics entrance exam- version 2

Question 1

If x and y are negative numbers, which of the following is negative?

- a.) xy
- b.) $(xy)^2$
- c.) $(x - y)^2$
- d.) $x + y$
- e.) $\frac{x}{y}$

Question 2

In a set of five books, no two of which have the same number of pages, the longest book has 150 pages and the shortest has 130 pages. If x pages is the average (arithmetic mean) of the number of pages in the five-book set, which of the following best indicates all possible values of x and only possible values of x ?

- a.) $130 < x < 150$
- b.) $131 < x < 149$
- c.) $133 < x < 145$
- d.) $134 < x < 145$
- e.) $135 < x < 145$

Question 3

Which of the following is greater than $\frac{1}{3}$?

- a.) 0.33
- b.) $\left(\frac{1}{3}\right)^2$
- c.) $\frac{1}{4}$
- d.) $\frac{1}{0.3}$
- e.) $\frac{0.3}{2}$

Question 4

Two ships leave from the same port at 11:30 a.m. If one sails due east at 20 miles per hour and the other due south at 15 miles per hour, how many miles apart are ships at 2:30 p.m.?

- a.) 25
- b.) 50
- c.) 75
- d.) 80
- e.) 85
- f.)

Question 5

If $2^{n-3} = \frac{1}{32}$, what is the value of n?

- a.) $\frac{1}{2}$
- b.) -2
- c.) 2
- d.) 8
- e.) $\frac{1}{8}$

Question 6

Sarah gave Peter $\frac{1}{3}$ of her plums. Peter ate $\frac{1}{2}$ of plums and gave the rest to Jessica. Jessica kept 5 of the plums and gave last 3 to Marc. How many plums did Peter eat?

- a) 6
- b) 10
- c) 24
- d) 8
- e) 48

Question 7

Which of the following is a solution of the given inequality $\frac{1}{2}(x+1) \leq \frac{1}{5} + 2x$?

- a) 0
- b) $\frac{1}{10}$
- c) $\frac{2}{5}$
- d) $-\frac{1}{5}$
- e) -1

Question 8

Calculate the number of square tiles needed to cover a rectangular surface of 4 m by 3 m if the length of each side of the tiles is 10 cm.

- a) 120
- b) 1200
- c) 12000
- d) 700
- e) 1000

Question 9

Bill walked 8 km east and then 15 km north. How far is he from his starting point?

- a) 7 m
- b) 120 m
- c) 20 m
- d) 23 m
- e) 17 m

Question 10

The average of three numbers is 20. If one of those numbers is 15, what is the average of the other two numbers?

- a) 30.5
- b) 35
- c) 5
- d) 22.5
- e) 25

Question 11

A manufacturer of jam wants to make a profit of \$75 by selling 300 jars of jam. It costs 65 cents each to make the first 100 jars of jam and 55 cents each to make each jar after the first 100. What price should be charged for the 300 jars of jam?

- a.) \$75
- b.) \$175
- c.) \$225
- d.) \$240
- e.) \$250

Question 12

If a job takes 12 workers 4 hours to complete, how long should it take 15 workers to complete the job?

- a.) 2 hr 40 min
- b.) 3 hr
- c.) 3 hr 12 min
- d.) 3 hr 24 min
- e.) 3 hr 30 min

Question 13

It costs g cents a mile for gasoline and m cents a mile for all other costs to run a car. How many *dollars* will it cost to run the car for 100 miles?

- a) $(g+m)/100$
- b) $100g + 100m$
- c) $g + m$
- d) $g + 0.1m$
- e) g

Question 14

If $\frac{x}{y} = \frac{3}{z}$ then $9y^2$ equals

- a) $\frac{x^2}{9}$
- b) x^3z
- c) x^2z^2
- d) $3x^2$
- e) $\left(\frac{1}{9}\right)x^2z^2$

Question 15

How many squares with sides $\frac{1}{2}$ centimeters long are needed to cover a rectangle that is 4 meters long and 6 meters wide?

- a) 24
- b) 960,000
- c) 24,000
- d) 96,000
- e) 6,000

Question 16

What is the value of $2^{12} + 2^{12} + 2^{12} + 2^{12} = ?$

- a) 2^{14}
- b) 8^{14}
- c) 8^{12}
- d) 2^{48}
- e) 8^{48}

Use the following information to answer question 17, 18, and 19

Town A		Town B
	<i>Gender</i>	
1100	Male	950
900	Female	1050
	<i>Profession</i>	
25	Medical	35
5	Law	7
50	Education	45
270	Government	310
70	Transport	60
305	other	325
	<i>Religion</i>	
1250	Muslim	550
250	Catholic	950
350	Orthodox	200
100	Jewish	200
50	Other	100

Question 17

How many percent more males in town B are of Catholic religion than those in town A?

- a.) 73
- b.) 50
- c.) 100
- d.) 0
- e.) Cannot say

Question 18

If in town B, all professions employed females, how many males would need employment in order to fill all the position set out above?

- a) 0
- b) 375
- c) 10% of all males
- d) 50% of all males
- e) Cannot say

Question 19

Approximately how many percent of all Muslims in town A would need to covert to Catholic religion for the two religions to have the same number of believers?

- a) 10%
- b) 40%
- c) 60%
- d) 100%
- e) Cannot say

Question 20

A business is owned by 9 men and 1 woman, each of whom owns an equal share. If one of the men sells $\frac{1}{2}$ of his share to the woman, and another man keeps $\frac{1}{5}$ of his share and sells the rest to the woman, what fraction of the business will the woman own?

- a.) $\frac{23}{100}$
- b.) $\frac{11}{32}$
- c.) $\frac{7}{8}$
- d.) $\frac{1}{2}$
- e.) Cannot say

Mathematics entrance exam- version 3

Question 1

The sum of three consecutive odd numbers is always divisible by:

- I. 2
 - II. 3
 - III. 5
 - IV. 6
- a.) I only
 - b.) II only
 - c.) I and II only
 - d.) I and III only
 - e.) II and IV only

Question 2

If T tons of snow fall in 1 second, how many tons fall in M minute?

- a.) $60MT$
- b.) $MT + 60$
- c.) MT
- d.) $\frac{60M}{T}$
- e.) $\frac{MT}{60}$

Question 3

Justin is making snowballs to build a fort on the winter break. Justin can build 15 snowballs in an hour but 2 snowballs melt every 15 minutes. How long will it take him to build 210 snowballs?

- a.) 3 hours
- b.) 30 hours
- c.) 25 hours
- d.) 10 hours
- e.) 33 hours

Question 4

There are just two ways in which 5 may be expressed as the sum of two different positive (nonzero) integers, namely, $5=4+1=3+2$. In how many ways may 9 be expressed as the sum of two different positive (nonzero integers)?

- a.) 3
- b.) 4
- c.) 5
- d.) 6
- e.) 7

Question 5

A piece of fabric is cut into three sections so that the first is three times as long as the second and the second is three times as long as the third. What part of the entire piece is the smallest section?

- a) $\frac{1}{12}$
- b) $\frac{1}{9}$
- c) $\frac{1}{3}$
- d) $\frac{1}{7}$
- e) $\frac{1}{13}$

Question 6

When the birthday cake was about to be served, you were told you could have 0.6, 60%, $\frac{3}{5}$, 6%. Which 3 will give you the same size portion?

- a) 0.6, 60% and $\frac{3}{5}$
- b) 0.6, 60% and 6%
- c) 0.6, $\frac{3}{5}$ and 6%
- d) $\frac{3}{5}$, 60% and 6%
- e) There is no combination of these three that give same size.

Question 7

Which of the following is not a solution of the inequality $\frac{1}{2}(x + 3) \geq 3x - 4$?

- a) $11/5$
- b) 0
- c) $-2/5$
- d) $11/10$
- e) 2.5

Question 8

The diameter of your bicycle wheel is 25 inches. How far will you move in one turn of your wheel?

- a) 25 in
- b) 78.5 in
- c) 250 in
- d) 246.49 in
- e) 50 in

Question 9

The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall, how long is the ladder?

- a) 7 feet
- b) 100 feet
- c) 10 feet
- d) 14 feet
- e) 48 feet

Question 10

An 800 car parking lot is divided into 3 sections. There are 270 spots in section 1, and 150 more in section 2 than section 3. How many spots are in section 2?

- a) 120
- b) 420
- c) 300
- d) 190
- e) 340

Question 11

If the average (or arithmetic mean) of 6 numbers is 4.5, what is the sum of the numbers?

- a.) 4.5
- b.) 24
- c.) 27
- d.) 30
- e.) cannot be determined

Question 12

Twelve eggs cost \$0.90. Peppers cost \$0.20 each. An omelet consists of 3 eggs and $\frac{1}{4}$ of a pepper. How much will the ingredients for 8 omelets cost?

- a.) \$0.90
- b.) \$1.30
- c.) \$1.80
- d.) \$2.20
- e.) \$2.70

Question 13

The interest charged on a loan is p dollars per \$1,000 for the first month and q dollars per \$1,000 for each month after the first month. How much interest will be charged during the first three months on a loan of \$10,000?

- a.) $30p$
- b.) $30q$
- c.) $p+2q$
- d.) $20p+10q$
- e.) $10p+20q$

Question 14

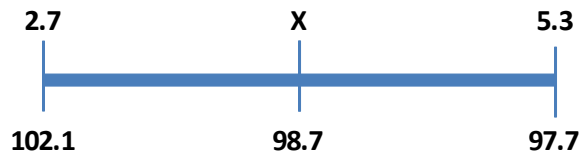
If $x + y = 6$ and $3x - y = 4$, then $x - y$ is equal to:

- a.) -1
- b.) 0
- c.) 2
- d.) 4
- e.) none of these

Question 15

What is the length of the line segment that connects A (-1, 2) and B (5, -1)?

- a.) $3\sqrt{5}$
- b.) 3
- c.) $5\sqrt{3}$
- d.) 5
- e.) 8

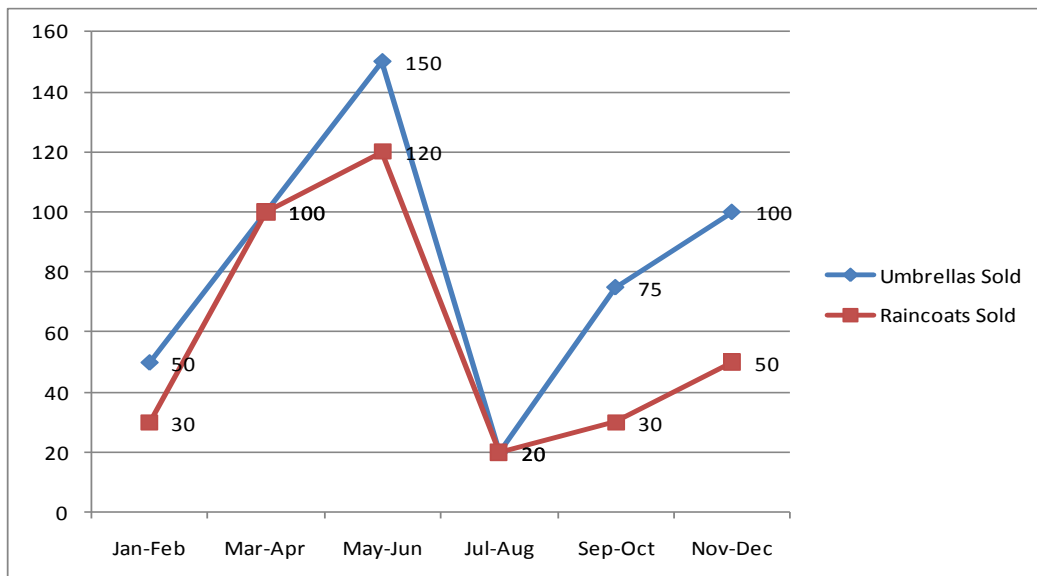


Question 16

Consider the above information. What is the value of X?:

- a.) 3.3
- b.) 3.7
- c.) 4.0
- d.) 4.3
- e.) 4.7

Use the following information to answer question 17, 18, and 19



Question 17

In percentage terms, how many more umbrellas were sold when compared to number of raincoats sold, during the March-April period?

- a) Sales of raincoats were higher than sales of umbrellas
- b) 33
- c) 100
- d) 0
- e) Cannot say

Question 18

If total revenue from sales and umbrellas during September-October period were \$3600 and one raincoat was sold for \$95, what was the price of umbrellas?

- a) \$10
- b) \$5
- c) \$95
- d) Free. Everyone who bought a raincoat was given a free umbrella.
- e) Cannot say

Question 19

On average, what percentage of total number of sales of both items, did raincoats account for over the whole six periods, i.e. the whole year?

- a) 50%
- b) 41%
- c) 59%
- d) 71%
- e) Cannot say

Question 20

In analytic geometry, a sphere with center (x_0, y_0, z_0) and a radius r is given by:

$$(x - x_0)^2 + (y - y_0)^2 + (z - z_0)^2 = r^2. \quad \text{What is the diameter of the sphere?}$$

- a.) $2r$
- b.) $2\pi^2$
- c.) π^3
- d.) $2\pi r$
- e.) Cannot say

Mathematics entrance exam- version 4

Question 1

$1\frac{1}{4}$ subtracted from its reciprocal is:

- a) $\frac{9}{20}$
- b) $\frac{1}{5}$
- c) $-\frac{1}{20}$
- d) $-\frac{1}{5}$
- e) $-\frac{9}{20}$

Question 2

If nails are bought at 35 cents per dozen and sold at 3 for 10 cents, the total profit on $5\frac{1}{2}$ dozen is:

- a) 25 cents
- b) $27\frac{1}{2}$ cents
- c) $28\frac{1}{2}$ cents
- d) $31\frac{1}{2}$ cents
- e) 35 cents

(Note: Dozen denotes a quantity consisting of 12 items or units)

Question 3

What would be the marked price of an article if the cost was \$12.60 and the gain was 10% of the selling price?

- a) \$11.34
- b) \$12.48
- c) \$13.66
- d) \$13.86
- e) \$14.00

Question 4

If the total weight of an apple is $\frac{4}{5}$ of its weight plus $\frac{4}{5}$ of an ounce, what is its weight in ounces?

- a) $1\frac{3}{5}$
- b) $3\frac{1}{2}$
- c) 4
- d) $4\frac{4}{5}$
- e) 5

Question 5

If five triangles are constructed having sides of the length indicated below, the triangle that will NOT be a right triangle is:

- a) 5,12,13
- b) 3,4,5
- c) 8,15,17
- d) 9,40,41
- e) 12,15,18

Question 6

When a farmer was asked how many sheep he has, he answered: "My flock doesn't have more than 80 sheep, and they can be divided in groups of 6, 8 and 9 sheep". How many sheep did the farmer have?

- a) 72
- b) 48
- c) 63
- d) 80
- e) 90

Question 7

Three barrels with grapes weight 178kg. First barrel weight $\frac{6}{7}$ of the second barrel and the third barrel weights 80% of the first barrel. How much does each barrel weight?

- a) 70kg, 35kg, 48kg
- b) 60kg, 70kg, 48kg
- c) 50kg, 50kg, 78kg
- d) 50kg, 80kg, 48kg
- e) 60kg, 50kg, 38kg

Question 8

Which of the given sets represents the solution of the inequality $-\frac{5x+1}{3} \geq 2x+7$?

- a.) $(-\infty, 2)$
- b.) $(-\infty, -2]$
- c.) $[-\infty, -2]$
- d.) $(-\infty, -2)$
- e.) $[-2, \infty)$

Question 9

There are 28 pupils in a class. In the exam, four of them got grade 5, six got 4, eleven got 3, three got 2 and 4 pupils got 1. What is the average grade of the class in this exam?

- a) 2.9
- b) 3.04
- c) 3.11
- d) 2.85
- e) 3

Question 10

Find the diagonal of a square, if its perimeter is $P = 48\sqrt{2}$?

- a) 15 cm
- b) 10 cm
- c) 12 cm
- d) 24 cm
- e) 20 cm

Question 11

A warehouse has 20 packers. Each packer can load $\frac{1}{8}$ of a box in 10 minutes. How many boxes can be loaded in 2 hours by all 20 packers?

- a) $1\frac{1}{4}$
- b) $10\frac{1}{4}$
- c) $12\frac{1}{2}$
- d) 30
- e) 25

Question 12

A motorcycle costs \$3,200 when it is brand new. At the end of each year it is worth $\frac{3}{4}$ of what it was at the beginning of the year. What is the motorcycle worth when it is 3 years old?

- a) \$1,000
- b) \$1,800
- c) \$1,280
- d) \$1,350
- e) \$1,530

Question 13

If electricity costs $\$k$ an hour, heat $\$d$ an hour, and water w cents an hour, how much will all three cost for 12 hours?

- a) $12(k + d + w)$ cents
- b) $\$(12k + 12d + 12w)$
- c) $\$(k + 100d + w)$
- d) $\$(12k + 12d/100 + 12w)$
- e) $\$(12k + 12d + 0.12w)$

Question 14

If $2y - y = 2x - x$ then $x - y$ is equal to:

- a) 2
- b) 0
- c) 4
- d) 5
- e) Cannot be determined

Question 15

If $x = y = 2z$ and $x*y*z = 500$, then x equals?

- a) $2\sqrt[3]{2}$
- b) 2
- c) $4\sqrt[3]{2}$
- d) 10
- e) 8

Question 16

An aircraft flies 930 miles in 75 minutes. How many miles does it fly in 4 hours 45 minutes assuming a constant speed?

- a) 3112
- b) 3477
- c) 3512
- d) 3522
- e) 3534

Question 17

You get a wage increase of 4% plus an extra five Euros per week. Your present wages are 250 Euros per week. What will your new wage be in Euros?

- a) 260
- b) 265
- c) 270
- d) 275
- e) 280

Use information below on the exchange rates of pounds to Euros and pounds to dollars, to answer questions 18, 19, and 20.

2007	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Value of pounds in dollars	1.96	1.96	1.95	1.99	1.98	1.99	2.03	2.01	2.02	2.05	2.07	2.01
Value of pounds in euros	1.51	1.5	1.47	1.47	1.47	1.48	1.48	1.48	1.45	1.44	1.41	1.38

Question 18

If you converted 67 Euros to Pounds in February, how many Dollars (ignoring any cents) would this be worth in November?

- a) 87
- b) 89
- c) 91
- d) 93
- e) 95

Question 19

What was the percentage drop in the value of the Pound compared to the Euro over the year?

- a) 6
- b) 8
- c) 10
- d) 12
- e) 14

Question 20

How many Dollars was one Euro worth in May?

- a) 1.15
- b) 1.20
- c) 1.25
- d) 1.30
- e) 1.35

Mathematics entrance exam- version 5

Question 1

If $(p + 1) = M$, then $p =$

- a.) $M - 1$
- b.) M
- c.) $\frac{M-1}{x}$
- d.) $M - x - 1$
- e.) $\frac{M}{x} - 1$

Question 2

A farmer raises chickens and cows. If his animals have a total of 120 heads and a total of 300 feet, how many chickens does the farmer have?

- a.) 50
- b.) 60
- c.) 70
- d.) 80
- e.) 90

Question 3

Using his bike, Daryl can complete a paper route in 20 minutes. Francisco, who walks the route, can complete it in 30 minutes. How long will it take the two boys to complete the route if they work together, one starting at each end of the route?

- a.) 8 minutes
- b.) 12 minutes
- c.) 40 minutes
- d.) 30 minutes
- e.) 45 minutes

Question 4

If $a > 0$, which of the following has the smallest value?

- a.) $\frac{2}{a}$
- b.) $\frac{a}{2}$
- c.) $a + \frac{1}{2}$
- d.) $\frac{2}{a+1}$
- e.) $\frac{2}{a-1}$

Question 5

The average of two numbers is A . If one number is x , what is the other number?

- a) $A - x$
- b) $\frac{A}{2} - x$
- c) $2A - x$
- d) $\frac{A+x}{2}$
- e) $x - A$

Question 6

The sum of two numbers is 10 and the sum of their squares is 68. Find the two numbers.

- a) 1 and 9
- b) 2 and 8
- c) 3 and 7
- d) 10 and 2
- e) 3 and 14

Question 7

In Prishtina, the high temperatures in Celsius for six days in December were -6° , 0° , -1° , -6° , -8° , -3° . What was the average temperature in Prishtina for these six days?

- a) -24°
- b) -4°
- c) 0°
- d) -8°
- e) 2°

Question 8

John is twice as old as Peter. In 8 years, John's age will be 2 more than the sum of their present ages. How old is John now?

- a.) 6
- b.) 12
- c.) 18
- d.) 4
- e.) 16

Question 9

Which of the following satisfies the conditions $2x > 3$ and $3x < 8$?

- a) 0
- b) -2.5
- c) 4
- d) -2
- e) $\frac{7}{3}$

Question 10

Which of the following could be the lengths of the sides of a right angled triangle?

- a) 8, 7, 15
- b) 9, 12, 15
- c) 9, 12, 16
- d) 8, 7, 10
- e) 6, 8, 9

Question 11

The train travels from Albany to Syracuse, a distance of 120 kilometers, at the average rate of 50 km/h. The train travels back to Albany from Syracuse. The total travelling time of the train is 5 hours and 24 minutes. What was the average rate speed of the train on the return trip to Albany?

- a) 60 km/h
- b) 50 km/h
- c) 48 km/h
- d) 40 km/h
- e) 35 km/h

Question 12

A parking lot charges a flat rate of x dollars for any amount of time up to two hours, and $\frac{1}{6}x$ for each hour or fraction of an hour after the first two hours. How much does it cost to park for 5 hours and 15 minutes?

- a) $3x$
- b) $2x$
- c) $1\frac{2}{3}x$
- d) $1\frac{1}{2}x$
- e) $1\frac{1}{6}x$

Question 13

Ms Taylor purchased stock for \$1,500 and sold $\frac{2}{3}$ of it after its value doubled. She sold the remaining stock at 5 times its purchase price. What was her total profit on the stock?

- a) \$1,500
- b) \$2,000
- c) \$2,500
- d) \$3,000
- e) \$6,000

Question 14

What is the length of the line segment that connects A(-1, 5) and B(2, -1)?

- a) $3\sqrt{5}$
- b) 3
- c) $5\sqrt{3}$
- d) 5
- e) 8

Question 15

How much fence will be needed to enclose a rectangular field that is 20 meters long and 100 meters wide?

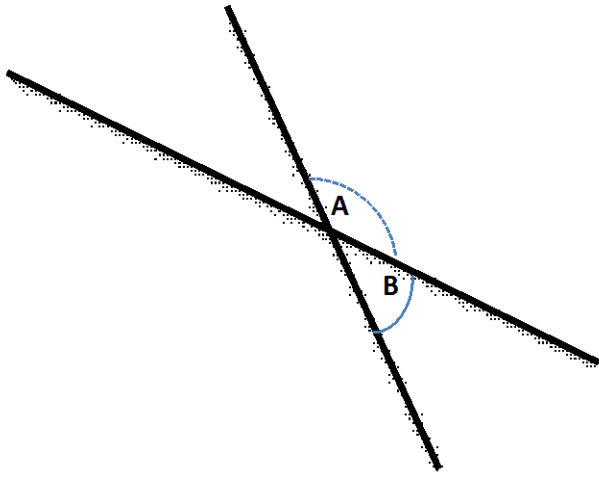
- a) 120 meters
- b) 140 meters
- c) 200 meters
- d) 240 meters
- e) 2,000 meters

Question 16

If Kalpana remembers that her mother's birthday is after 11th August but before 15th August and her brother Ramesh remembers that the birthday is before 20th August but after 13th August. If both of them are correct, when does the birthday of their mother fall?

- a) 13 August
- b) 14 August
- c) 15 August
- d) 16 August
- e) Cannot say

Question 17



Consider the two angles **A** and **B**. Find the value of **x** if **A = 24x-20**, and **B = 22x -30**.

- a) 5
- b) 10
- c) 15
- d) 20
- e) Cannot say

Use information below on the average number of beds per hotel, for the following countries, to answer questions 18, 19, and 20.

	Normark	Italistan	Botsibia	Velumbia	Korgolia
2001	75.6	19.7	31.6	94.6	50.3
2006	86.3	31.9	32.1	101.8	53.7

Question 18

Which country had the greatest percentage change on the average number of beds per hotel between years 2001 and 2006?

- a) Normark
- b) Italistan
- c) Botsibia
- d) Velumbia
- e) Korgolia

Question 19

If Korgolia had had the same percentage increase in the average number of beds as Normark, between years 2001 and 2006, how many beds per hotel would you expect to Korgoli to have in 2006?

- a) 57.3
- b) 75.6
- c) 86.3
- d) 80.9
- e) Cannot say

Question 20

Assume that value for 2006 for Botsibia is missing. However, you know that ratio of beds in 2006 between Normak and Italistan, is the same as ratio between Velumbia and Botsibia. How many beds per hotel would you expected Botsibia to have?

- a) 101.8
- b) 32.1
- c) 37.6
- d) 86.3
- e) Cannot say

Answer key

Version 1

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

Version 2

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

Version 3

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

Version 4

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

Version 5

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