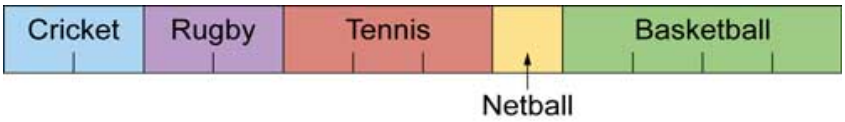
GRAPH QUESTIONS

QUESTION 1A

A group of 360 students were asked to choose their favourite sport. The results were shown on a divided bar graph.

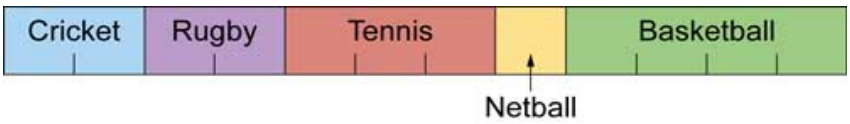


How many chose the sport most popular with these students?

A. 72
B. 108
C. 120
D. 180

QUESTION 1B

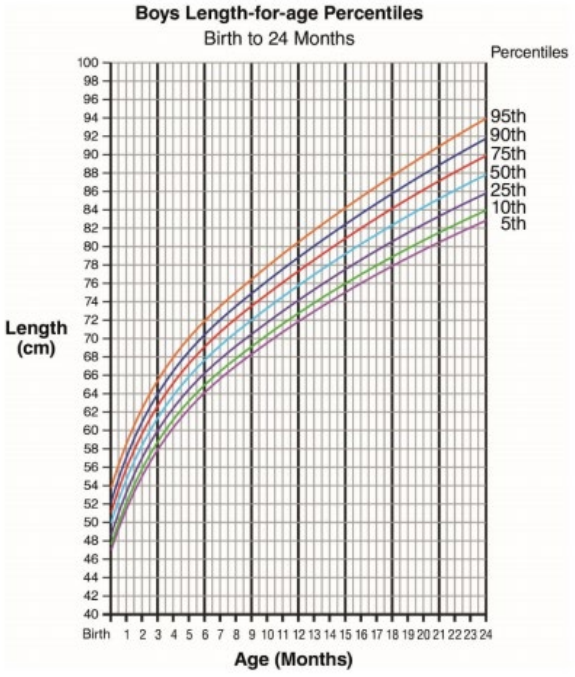
A group of 540 students were asked to choose their favourite sport. The results were shown on a divided bar graph.



How many chose the sport least popular with these students?

QUESTION 2

This graph shows the length of boys from birth to 24 months by selected percentiles:

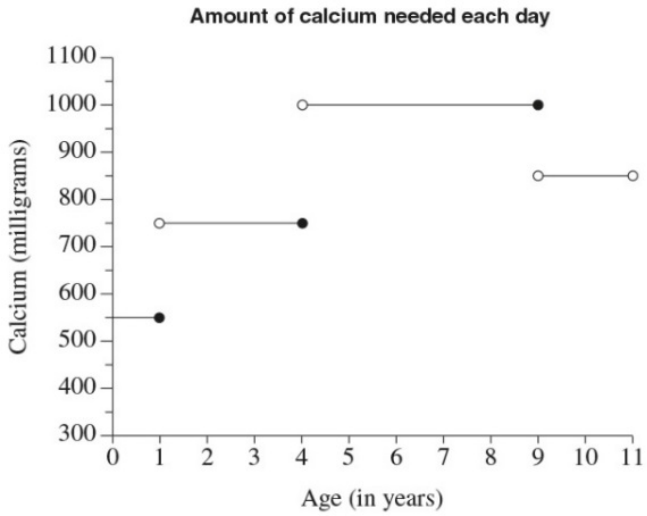


A boy is 74 cm long at 12 months. His length is closest to which percentile?

A. 50th
B. 25th
C. 10th
D. 5th

QUESTION 3A

The graph below shows how much calcium children need each day:

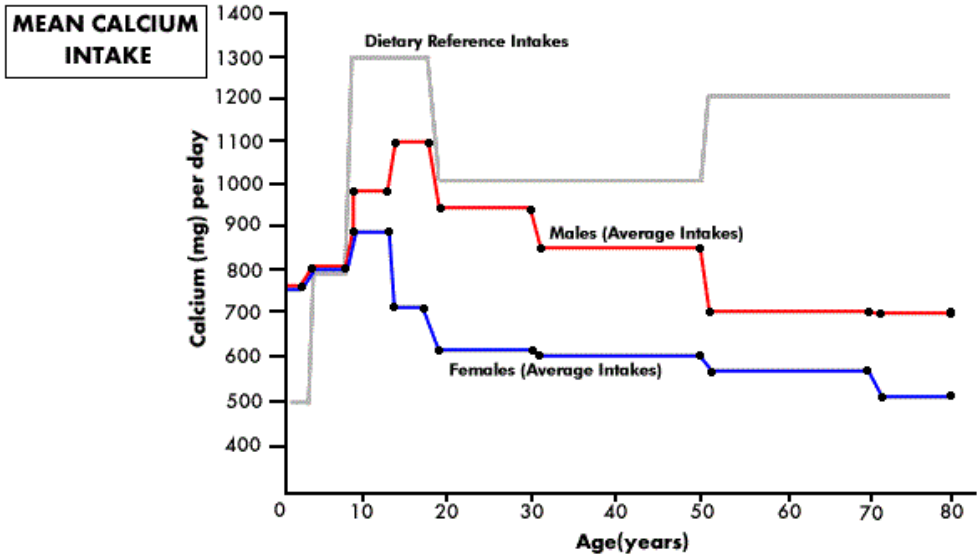


Jack is 18 months old and Peter is 10 years old. How much more calcium does Peter need each day than Jack?

A. 100 mg
B. 150 mg
C. 250 mg
D. 300 mg

QUESTION 3B

The graph below shows the mean calcium intake of males and females, compared to the recommended amount, across age groups:



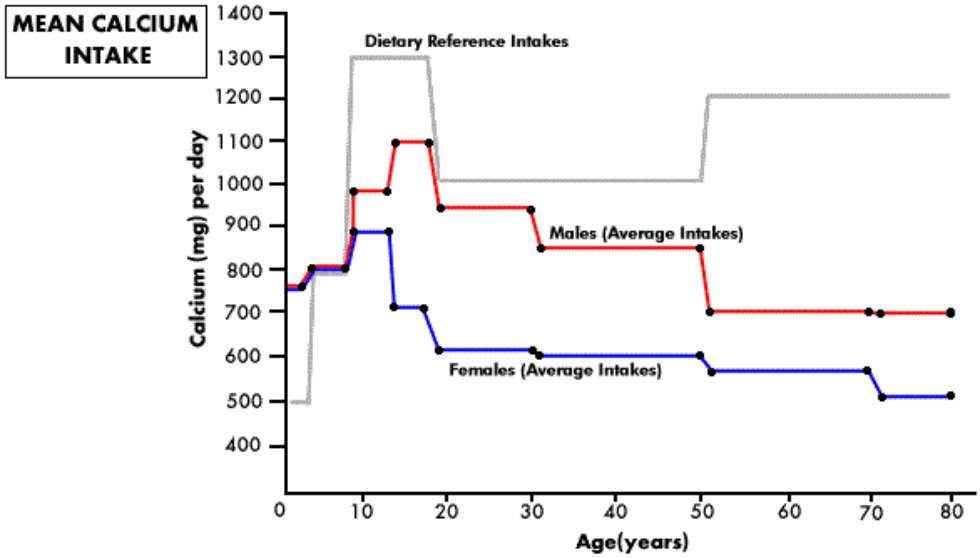
Source: http://www.theherbspecialist.com/14_10.html

On average, approximately how much less calcium are 40 year old females getting per day than the recommended amount (dietary reference intakes)?

A. 100mg
B. 200mg
C. 300mg
D. 400mg

QUESTION 3C

The graph below shows the mean calcium intake of males and females, compared to the recommended amount, across age groups:



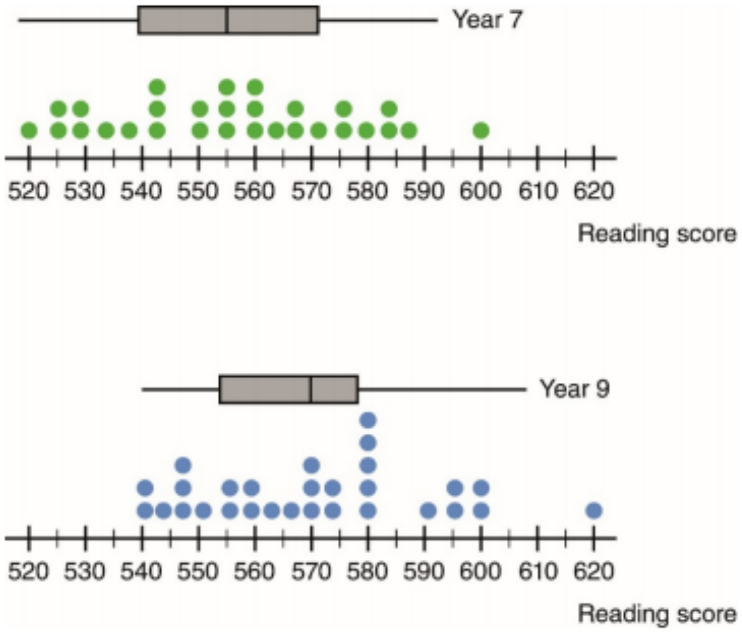
Source: http://www.theherbspecialist.com/14_10.html

On average, approximately how much less calcium are 60 year old males getting per day than the recommended amount (dietary reference intakes)?

A. 300mg
B. 400mg
C. 500mg
D. 600mg

QUESTION 4A

In Year 7, a group of 29 students completed a reading test. In Year 9, the same group of students completed a reading test from the same series. The graphs below show their results. Scores at Year 7 and Year 9 are reported on the same scale:

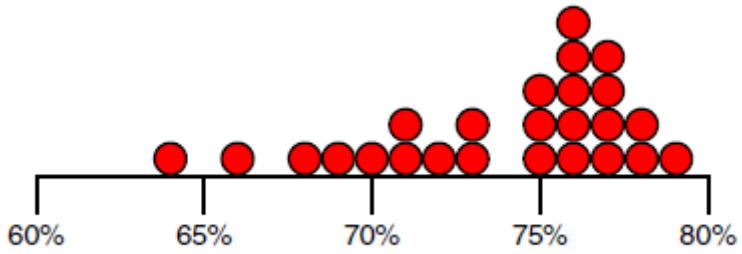


Select true or false for each of the following statements:

a. The difference between the highest and lowest Year 7 reading scores was 120
b. Six Year 9 scores were greater than 585
c. There is at least one student whose reading score has increased by 20 or more from Year 7 to Year 9
d. The difference between the median (middle) reading scores of Year 7 and Year 9 is 10

QUESTION 4B

A teacher gives an assessment to the 25 students in her class. The graph below shows a plot of the students' scores:

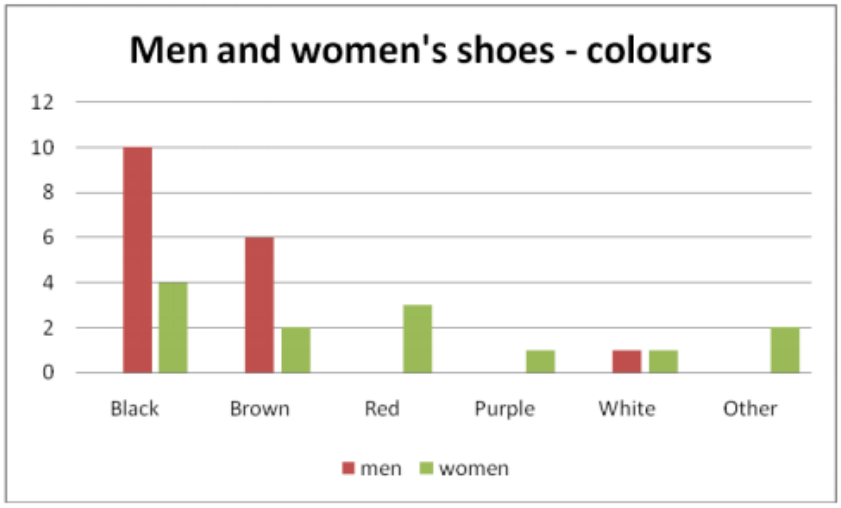


Select true or false for each of the following statements:

a. More than half the class scored below 75%
b. 20% of the class scored greater than 70% but less than 75%
c. One-fifth of the class scored below 70%
d. The mode of the class scores is 76%

QUESTION 5

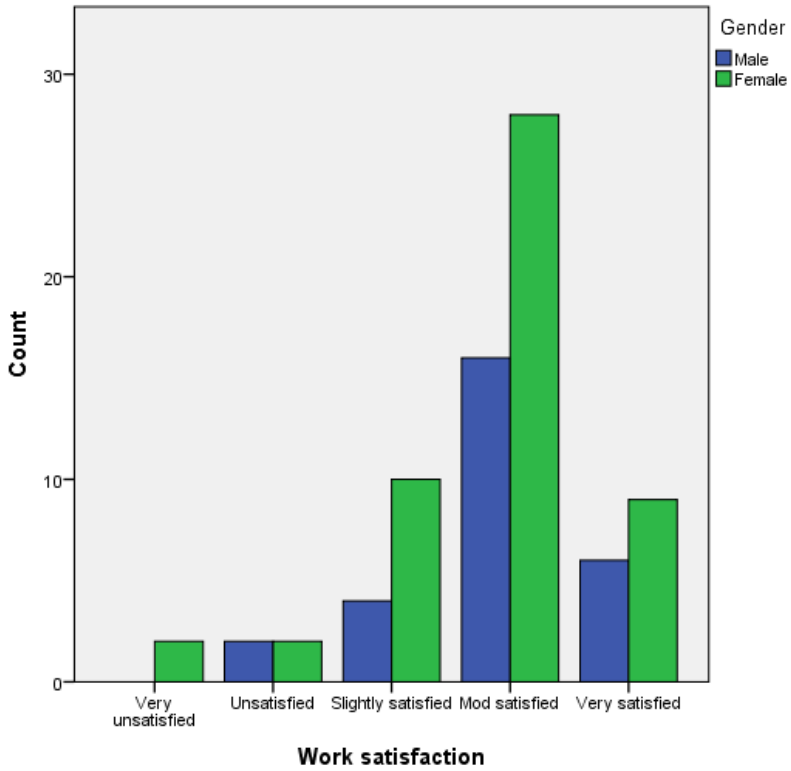
Data was collected regarding the colour of shoes worn by 30 adults in a group:



What was the second most popular colour of shoes amongst women?

QUESTION 6A

A sample of 80 company employees were asked about their level of work satisfaction. A comparison of results between males and females is displayed in the graph below:

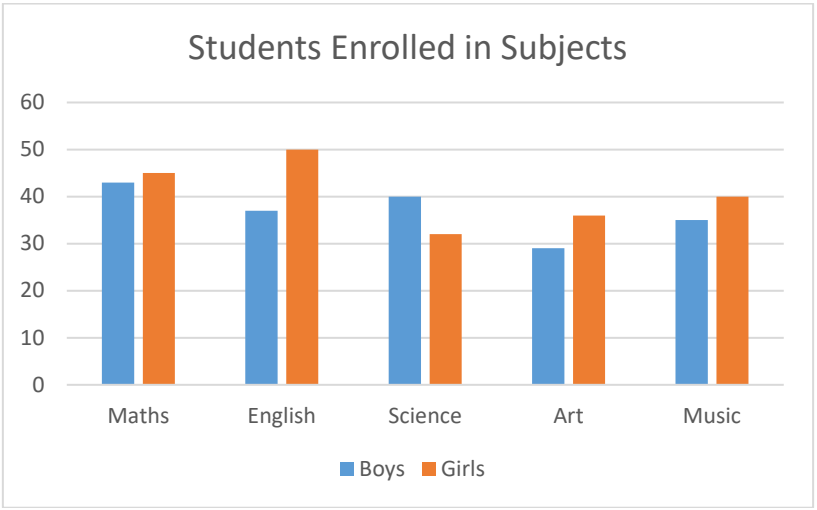


For which category of work satisfaction is the proportion of males the greatest?

A. Very unsatisfied
B. Unsatisfied
C. Slightly satisfied
D. Moderately satisfied
E. Very satisfied

QUESTION 6B

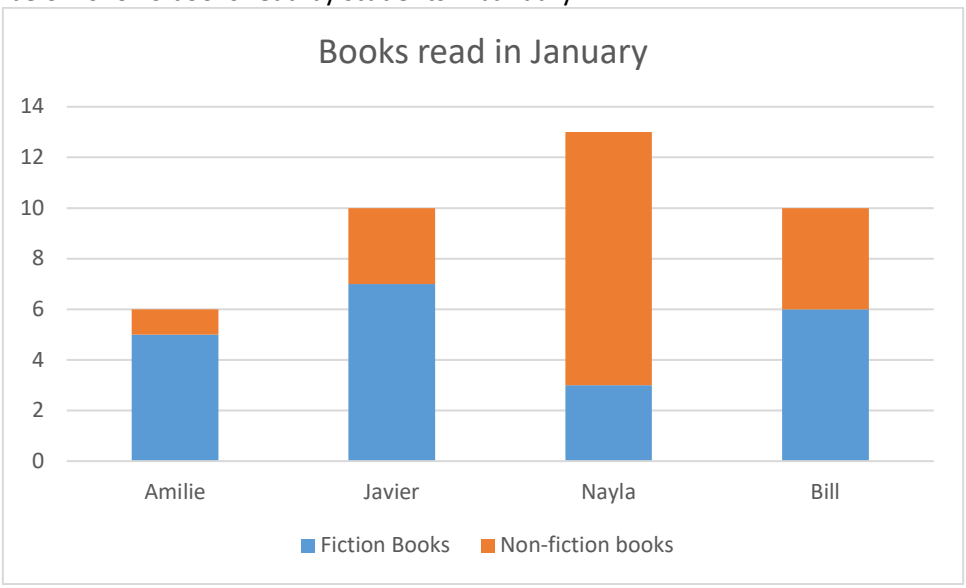
The graph below shows how many boys and girls are enrolled in each of five school subjects:



For which subject is the proportion of males the greatest?

QUESTION 6C

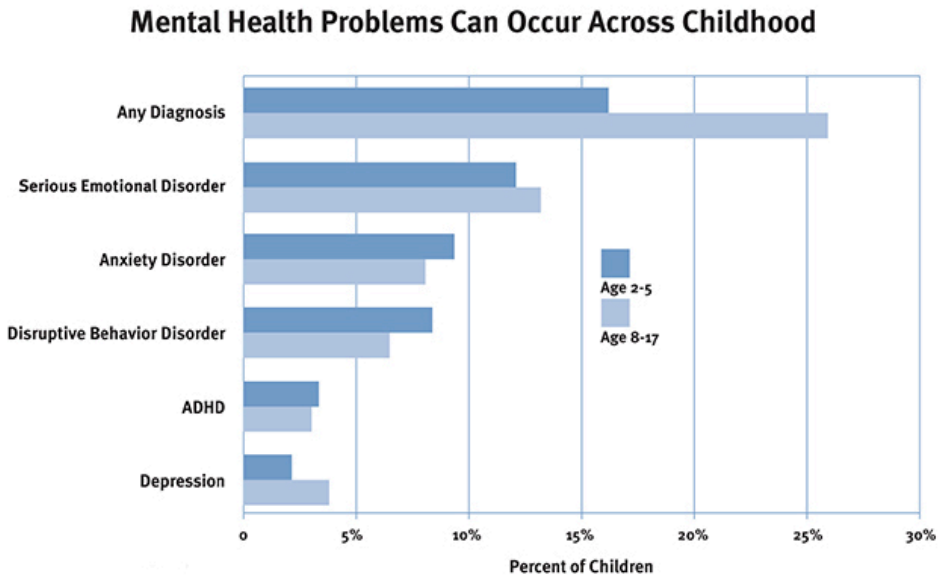
The graph below shows books read by students in January:



For which student is the proportion of fiction books the greatest?

QUESTION 7A

The graph below shows the rates of mental health problems across childhood for two different age groups:



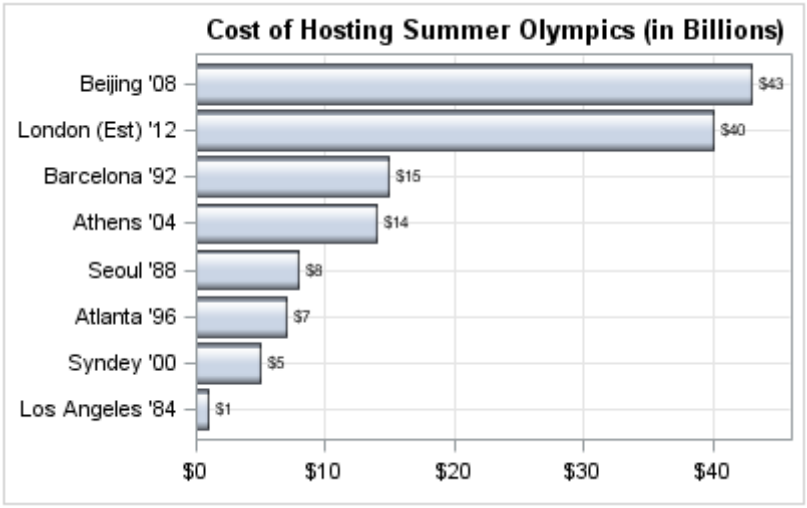
Source: https://developingchild.harvard.edu/resources/inbrief-early-childhood-mental-health/

How have the mental health rates been used to order the graph from top to bottom?

A. By age group 2-5 in ascending order
B. By age group 8-17 in ascending order
C. By age group 2-5 in descending order
D. By age group 8-17 in descending order

QUESTION 7B

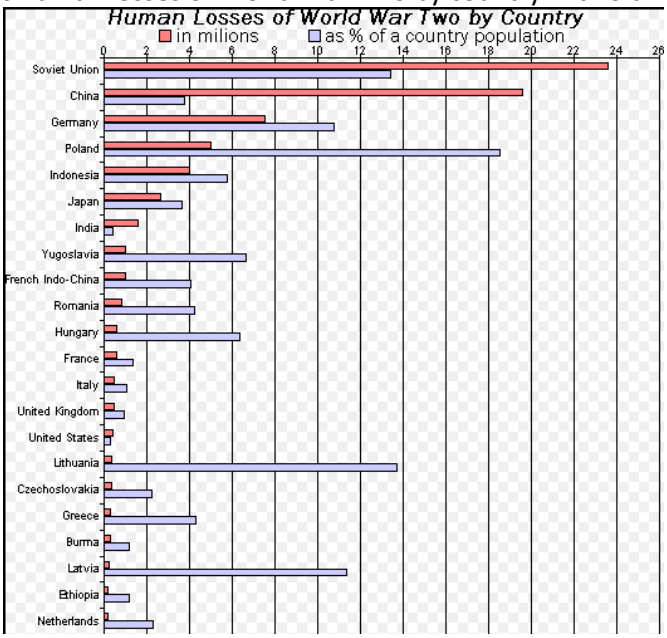
The graph below shows the cost of hosting the Summer Olympics in various years:



From top to bottom, has the graph been sorted by cost in ascending or descending order?

QUESTION 7C

The graph below shows human losses of World War Two by country in two different ways:



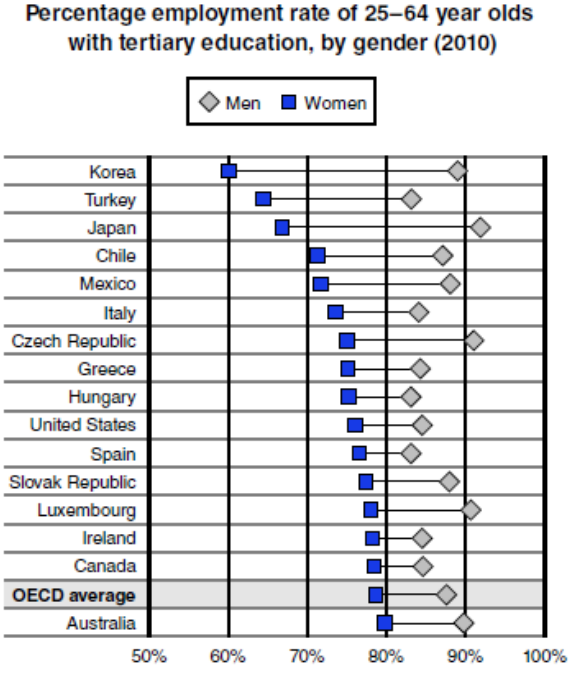
Source: https://en.wikipedia.org/wiki/Bar_chart

How have the losses been used to order the graph from top to bottom?

A. By loss in millions in ascending order
B. By loss in millions in descending order
C. By percentage loss in ascending order
D. By percentage loss in descending order

QUESTION 8

The graph below is adapted from the OECD report, Education at a Glance, 2012:

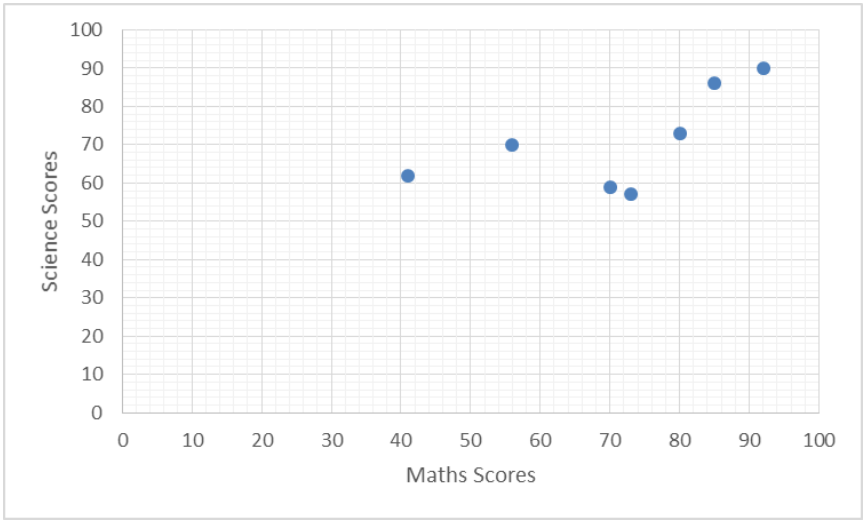


Source: *Education at a Glance* 2012, OECD indicators

True or false; Korea has a lower rate of employment than the OECD average for both men and women with tertiary education?

QUESTION 9

The results of 7 students in both their maths and science tests (as percentages) are displayed in the following scatterplot:

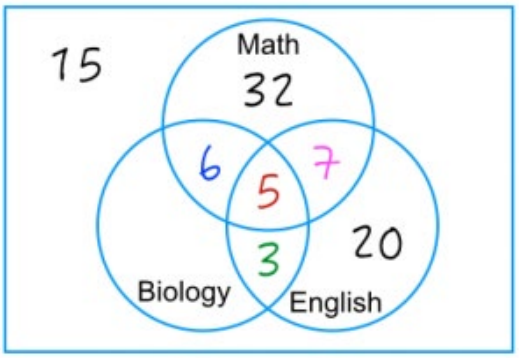


What score did the student who achieved 56% on their maths test achieve in their science test?

VENN DIAGRAM QUESTIONS

QUESTION 10

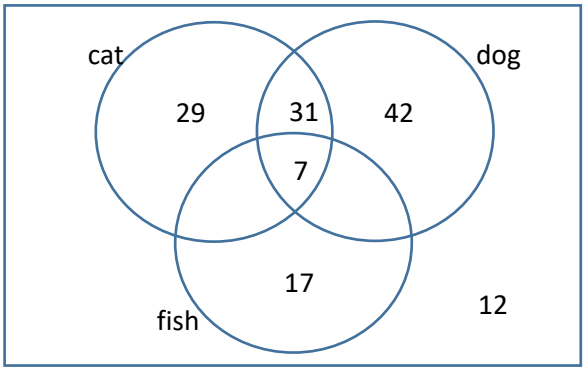
The following (incomplete) Venn diagram shows how many high school students are studying various subjects:



If 100 students were surveyed altogether, how many students are taking Biology?

QUESTION 11A

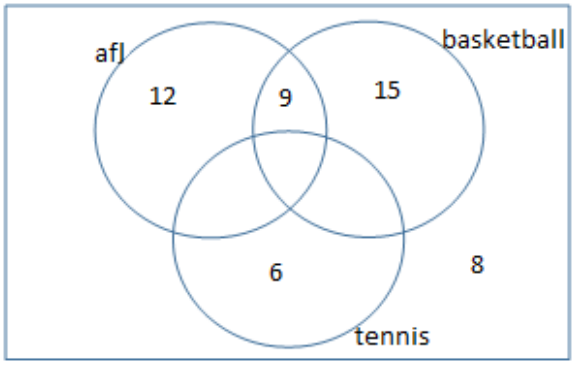
158 people completed a survey relating to what kinds of pets they own. The results of the survey are displayed in the following Venn diagram:



Given that 84 survey participants stated that they owned a cat, what are the number of participants who owned both a dog and a fish, but not a cat?

QUESTION 11B

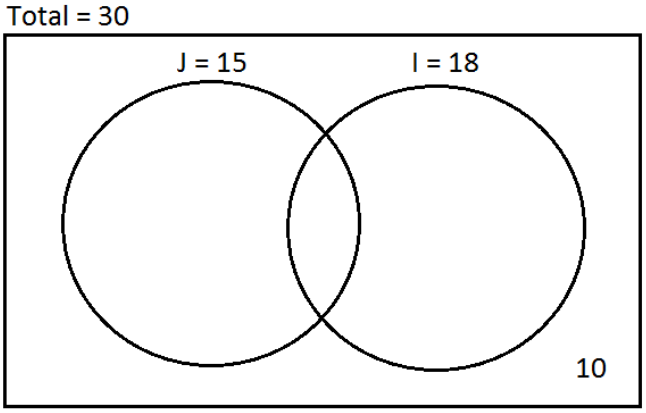
67 students were surveyed regarding which of three sports they play, and the results are displayed in the following Venn diagram:



Given 30 students play AFL, how many students play both tennis and basketball but not AFL?

QUESTION 12A

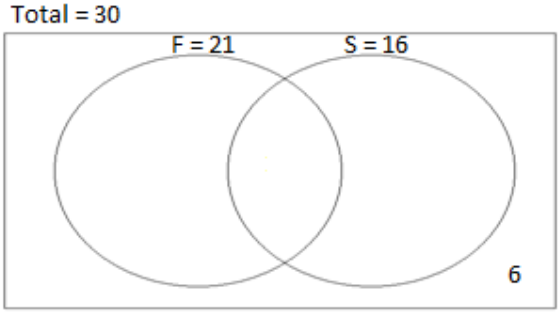
In a group of 30 language students, 15 studied Japanese, 18 studied Italian, and 10 studied neither Japanese nor Italian. Complete the Venn diagram below and use it to answer the questions that follow:



a. How many students studied both Italian and Japanese?
b. How many students studied only Italian?

QUESTION 12B

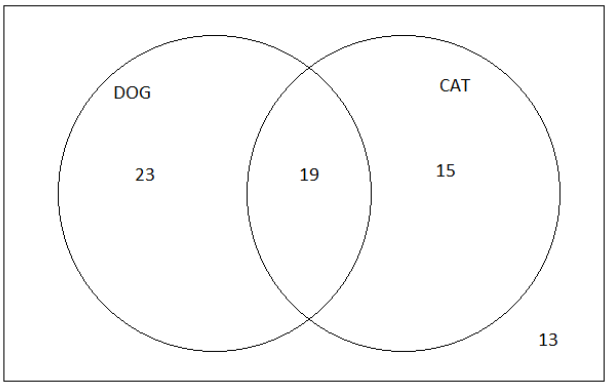
In a group of 30 language students, 21 studied French, 16 studied Spanish, and 6 studied neither French nor Spanish. Complete the Venn diagram below and use it to answer the questions:



a. How many students studied both French and Spanish?
b. How many students studied only French?

QUESTION 13

70 students were asked whether they had a dog, a cat, neither or both as pets. The results are displayed in the Venn diagram below:

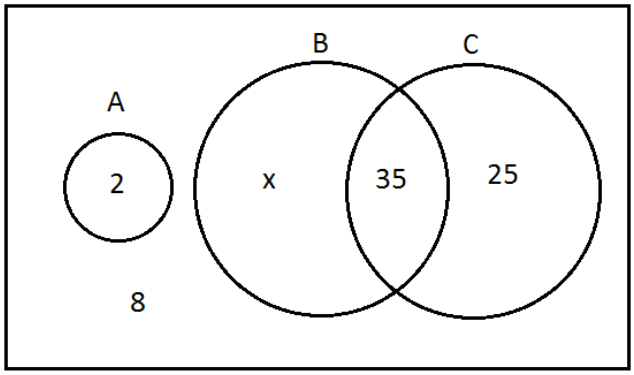


If this information were to be displayed as a two-way table instead, which number should be entered into the red cell?

	Has a dog	**Does not have a dog**
Has a cat		
Does not have a cat		

QUESTION 14

The following Venn diagram represents the results of a survey with 100 students, where group A is students who study art and design, group B is students who study biology and group C is students who study chemistry:



Use this diagram to answer the following questions:

a. Calculate the value of x
b. Describe in words the group with 25 members
c. What fraction of those students who studied biology also studied chemistry? (in simplest form)
d. How many students who studied biology also studied art and design?
e. What percentage of students surveyed studied both biology and chemistry?
f. What is the probability that one student selected at random from the survey will not have studied chemistry? (give your answer as a decimal)
g. What is the ratio of students taking biology only to students taking biology? (in simplest form)

STATISTICS QUESTIONS

QUESTION 15

Calculate the mean of the following seven exam grades:

70, 66, 72, 96, 46, 90, 50

QUESTION 16

The results of a survey, administered to 200 people and regarding mode of transport to work, are displayed in the following two way table:

	Car	Public transport	Bike	Walking	TOTAL
Male	42	61	12	5	**120**
Female	43	32	5	0	**80**
TOTAL	**85**	**93**	**17**	**5**	**200**

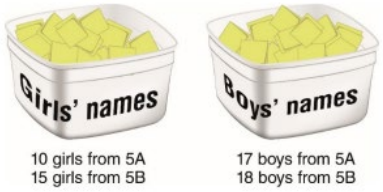
Use this to complete the following questions:

a. How many males take public transport to work?
b. What percentage of total survey participants walk to work?
c. What percentage of females drive a car to work?
d. What percentage of those who ride a bike to work are male (rounded to 2 decimal places)?

PROBABILITY QUESTIONS

QUESTION 17A

Two year 5 students, one girl and one boy, are to be randomly selected to read at an assembly. There are two Year 5 classes, 5A and 5B. The girls' names and the boys' names are placed into separate containers. The numbers of girls and the numbers of boys from each class are shown:



A girl is selected. What is the chance that the selected girl is from class 5A? Express your answer as a percentage.

QUESTION 17B

There are two Year 5 classes, 5A and 5B, and one student from each class is to be randomly selected to read at an assembly. Names for each class are placed into separate containers; there are 17 girls and 9 boys in class 5A, and 12 girls and 14 boys in class 5B. If a student from class 5A is selected, what is the chance that the student is a girl? Express your answer as a percentage rounded to two decimal places.

QUESTION 18

A raffle contains tickets numbered from 1 to 20, of which one is drawn at random. What is the probability that the number of the ticket drawn is a multiple of 3 or 5 (as a fraction in simplest form)?

QUESTION 19

There are 8 red balls, 7 blue balls and 6 green balls in a box. If one ball is pulled out randomly, what is the probability that it is neither red nor green (as a fraction in simplest form)?

QUESTION 20A

Possible outcomes when two dice are thrown are shown in the following table:

	1	2	3	4	5	6
1	1, 1	1, 2	1, 3	1, 4	1, 5	1, 6
2	2, 1	2, 2	2, 3	2, 4	2, 5	2, 6
3	3, 1	3, 2	3, 3	3, 4	3, 5	3, 6
4	4, 1	4, 2	4, 3	4, 4	4, 5	4, 6
5	5, 1	5, 2	5, 3	5, 4	5, 5	5, 6
6	6, 1	6, 2	6, 3	6, 4	6, 5	6, 6

Use this to determine the following probabilities, as fractions in simplest form:

a. The two dice show the same numbers
b. The two dice add to 9
c. Both dice show even numbers
d. The two dice multiply to make 12

QUESTION 20B

What is the probability that when two dice are thrown the topmost faces sum to 9 (as a fraction in simplest form)?

QUESTION 20C

What is the probability that when two dice are thrown the topmost faces sum to 7 (as a fraction in simplest form)?

QUESTION 21A

One bag contains three balls numbered 1-3, while a second bag contains five balls numbered 1-5. If one ball is drawn at random from each bag:

a. Create a table showing all possible outcomes
b. Use the table to determine the probability, as a decimal number, that both balls show the same number
c. Use the table to determine the probability, as a fraction in simplest form, that the difference between the two numbers is 2
d. Use the table to determine the probability, as a decimal number rounded to two decimal places, that one number is odd and the other is even

QUESTION 21B

One bag contains six balls numbered 1-6, while a second bag contains four balls numbered 1-4. If one ball is drawn at random from each bag, what is the probability that (give each as a fraction in simplest form):

a. The sum of the numbers on the two balls is 6
b. Both balls have the same number
c. Both balls have an even number

QUESTION 22A

Five cards are picked in turn from a shuffled pack of 52 playing cards. The first four cards are the Jack of Spades, King of Hearts, Queen of Diamonds and Jack of Clubs. What is the probability that the fifth card will NOT be another picture card (Jack, Queen, King) (as a fraction in simplest form)?

QUESTION 22B

Four cards are picked in turn from a shuffled pack of 52 playing cards. The first three cards are the King of Spades, Queen of Hearts and Jack of Diamonds. What is the probability that the fourth card will be another picture card (Jack, Queen, King), as a decimal rounded to two decimal places?

QUESTION 23

There were 18 boys and 6 girls in a group of children. If one child is chosen at random to leave the group, what is the chance that the child is a boy (as a percentage)?

SOLUTIONS

1A: C
1B: 45 students
2: B
3A: A
3B: D
3C: C
4A: a. False, b. True, c. True, d. False
4B: a. False, b. True, c. False, d. True
5: Red
6A: B
6B: Science
6C: Amilie
7A: C
7B: Descending
7C: B
8: False
9: 70%
10: 26
11A: 3
11B: 8
12A: a. 13, b. 5
12B: a. 13, b. 8
13: 23
14: 30, Students who study chemistry only, 35/65 = 7/13, 0, 35%, 0.4, 6:13
15: 70
16: a. 61, b. 2.5%, c. 53.75%, d. 70.59%
17A: 40%
17B: 65.38%
18: $\frac{9}{20}$
19: $\frac{1}{3}$
20A: a. $\frac{1}{6}$, b. $\frac{1}{9}$, c. $\frac{1}{4}$, d. $\frac{1}{9}$
20B: $\frac{1}{9}$
20C: $\frac{1}{6}$
21A: b. 0.2, c.$\frac{4}{15}$, d. 0.47
21B: a. $\frac{1}{6}$, b. $\frac{1}{6}$, c. $\frac{1}{4}$
22A: $\frac{5}{6}$
22B: 0.18
23: 75%