

Choose a circle to show how much each sentence is like you

Very Unlike Me 1	Unlike Me 2	Like Me 3	Very Like Me 4
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01. I like maths at school.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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02. I am good at maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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03. My teacher thinks I am good at maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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04. My Mum and Dad think I am good at maths.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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05. I enjoy doing maths in my own time (not at school).

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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06. I enjoy doing things in maths that I haven't tried before.

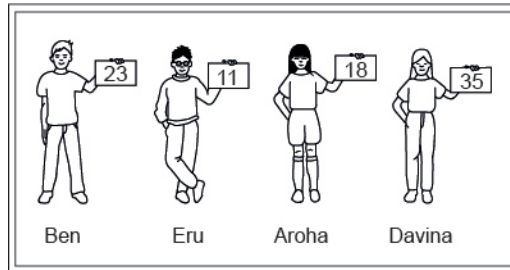
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Practice Questions

These practice questions are to help you understand how to show your answer for different types of questions.

P01. Who is holding a card with an even number on it?

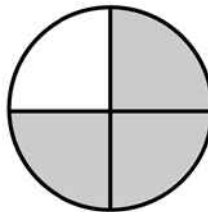


- Ben
- Eru
- Aroha
- Davina

P02. Complete this number pattern.

2, 4, _____, _____, 10

P03. What fraction of this circle is shaded?

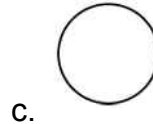
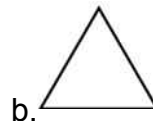
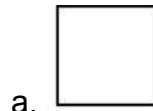




P04. Match the sentence with the correct shape.

1. I have three sides

2. I have 4 sides



P05. Which numbers make this number sentence **TRUE**?

$$2 + \star > 5$$

1

2

3

4

5

P06. Put the numbers 1, 2, 3, and 4 in the boxes to order these numbers from biggest (1) to smallest (4).

3

7

2

0

P07. Select whether the following statements are True or False.

In the number 213, the value of 1 is ten.

TRUE

FALSE

In the number 504, the value of 5 is fifty.

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01. In a bowling tournament, there were 2 scores in the 200's, 6 scores in the 180's, 5 scores in the 160's, 5 in the 150's, and 3 in the 130's.
The median score would be in the

- 150's.
- 160's.
- 180's.
- There is not enough information given.

02. Which is the closest to the value of x if $x = 2\sqrt{7}$?

- 3.2
- 3.7
- 5.3
- 9.9

03. If $\frac{2}{25} = \frac{n}{500}$, then $n =$

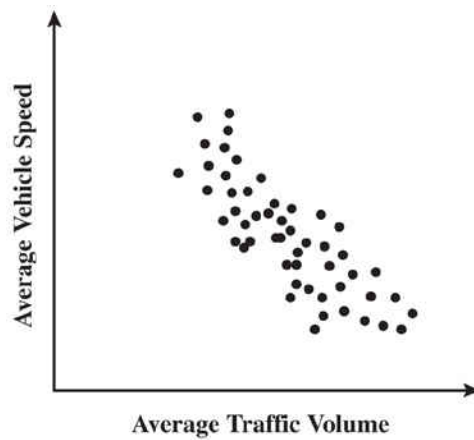
- 10
- 20
- 30
- 40
- 50

04. Between which of the following two integers does $3\sqrt{10}$ lie on the number line?

- 6 and 7
- 7 and 8
- 8 and 9
- 9 and 10

05. The scatter plot below shows the average traffic volume and average vehicle speed on a certain freeway for 50 days in 1999.

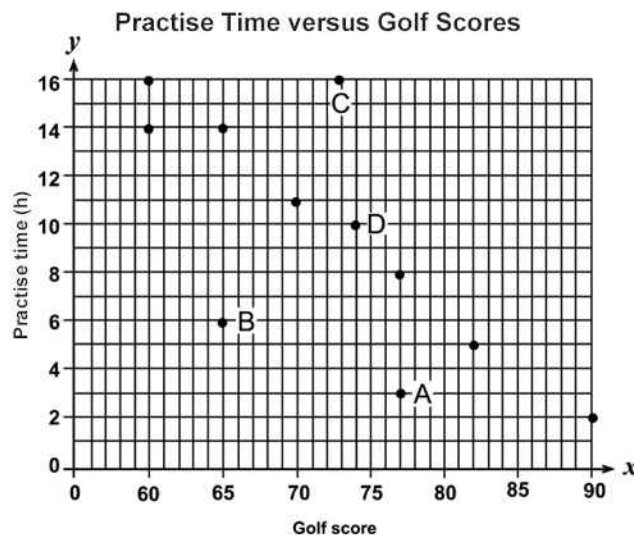
Which statement **BEST** describes the relationship between average traffic volume and average vehicle speed shown on the scatter plot?



- As traffic volume increases, vehicle speed increases.
- As traffic volume increases, vehicle speed decreases.
- As traffic volume increases, vehicle speed increases at first, then decreases.
- As traffic volume increases, vehicle speed decreases at first, then increases.

Use the following information to answer question 06..

The graph below shows the number of hours practised by golfers during the week before they play in a tournament.



06. If a line of best fit was drawn in the graph above, the point that would lie closest to this line would be

- A
- B
- C
- D

End of Section

07. The stem-and-leaf plot below shows the ages of 50 teachers in the Bernard Township school system.

Based on the stem-and-leaf plot, what percent of the teachers are over 50 years of age?

Ages of 50 Teachers in the Bernard Township School System

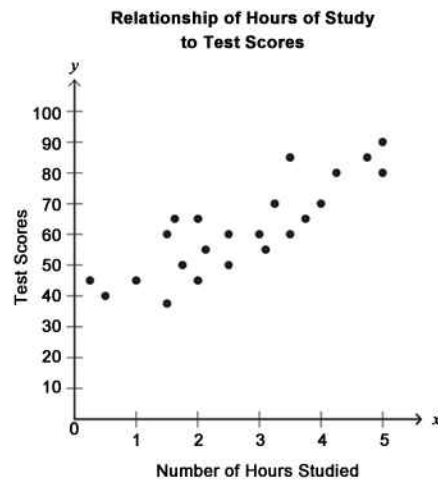
2	1	2	3	5	7															
3	1	2	3	5	5	7	7	8												
4	2	3	3	3	4	4	5	6	6	7	8									
5	1	2	3	4	4	4	6	7	8	9	9	9								
6	1	1	1	2	2	3	4	4	4	5	5	6	7	7						

Key	
6	1 = 61

- 26%
- 47%
- 51%
- 52%

08. Ms Kramer asked her students to report the number of hours they studied for their statistics test. The day after the test, she plotted the results on the scatterplot shown below.

Which of the following equations correctly approximates the line of best fit?



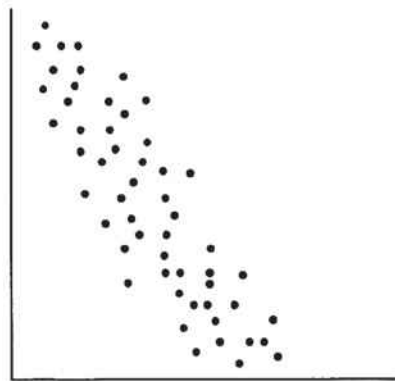
- $y = -10x + 30$
- $y = -10x + 60$
- $y = 10x + 30$
- $y = 10x + 60$

09. Mia has 90 roses and 135 carnations to put into vases. She wants to put the same number of roses and the same number of carnations into each vase.

What is the **greatest** number of vases that she will need in order to do this?

- 5
- 9
- 15
- 45

10. Which relationship would **MOST** likely result in a scatter plot like the one shown?



- The longer you study, the better your grades.
- The lower your earning, the less you spend.
- The longer you drive, the further you travel.
- The less you spend, the more savings you have.

11. The list shows the scores made by each member of Jaime's discussion group on the last test.

69, 79, 62, 93, 73, 81, 73, 78

Which box-and-whisker plot correctly displays the information?

-
-
-
-

12. A stop sign is a regular octagon.

Which of the following will calculate the size of each interior angle of the stop sign?



- (360 ÷ 8)
- $180 - (360 \div 8)$
- $180 + (360 \div 8)$
- $360 - (360 \div 8)$

13. In triangle ABC , $AC = 6$, $AB = 7$, and $BC = 5$.

Which is **TRUE**?

- The measure of $\angle C$ is the least of the three angles.
- The measure of $\angle C$ is the greatest of the three angles.
- The measure of $\angle B$ is the greatest of the three angles.
- The measure of $\angle B$ is the least of the three angles.

14. Rachel is investigating the different after school activities of students. To carry out the investigation the following process was followed:
 12 volunteers were found from among Rachel's friends.
 Responses were recorded for the previous day.
 Any partial hour was recorded as a full hour.
 The results are shown below.

Student	A	B	C	D	E	F	G	H	I	J	K	L
Hours playing sport	2	0	1	2	0	0	4	1	2	2	1	0
Hours watching TV	3	3	5	6	1	4	2	4	4	1	5	3
Hours on homework	0	4	1	0	3	2	1	2	0	0	1	3

Suggest two improvements to the statistical process used to obtain the data.

1. _____
2. _____

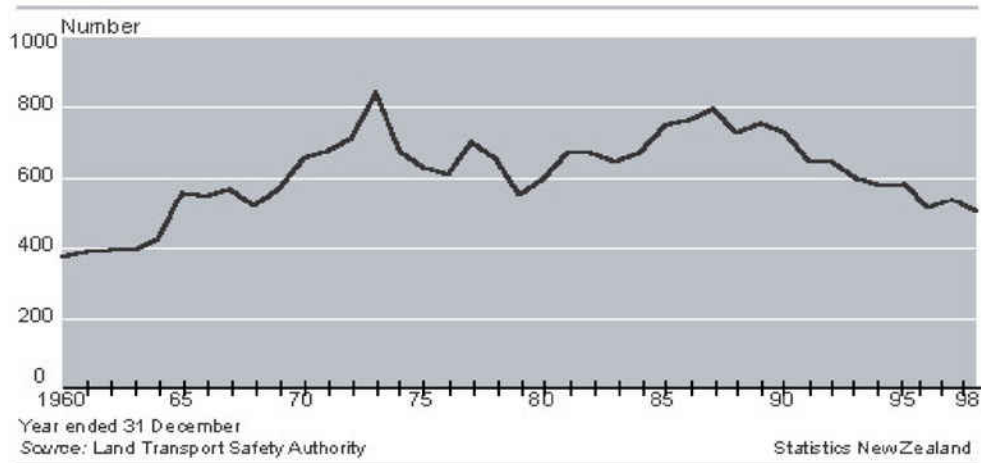
15. A road sign is in the form of an equilateral triangle. Each side measures 58 centimetres.
 The height of the triangle is

- 64.8 cm
- 29.0 cm
- 48.8 cm
- 46.8 cm
- 50.2 cm

Use the following information to answer question 16..

The graph shows the number of people killed on the roads in New Zealand between 1960 and 1998.

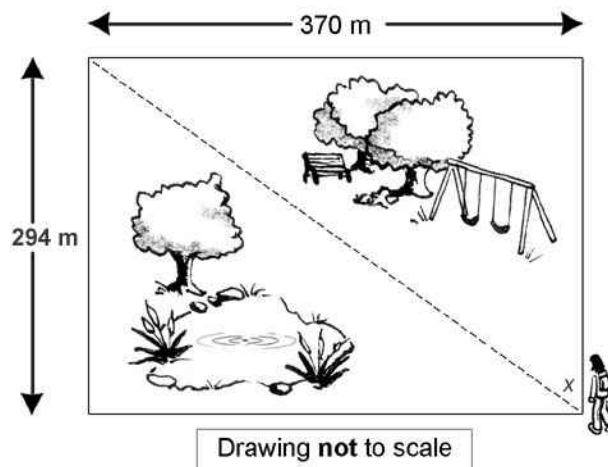
Numbers killed on the roads, 1960-1998



16. Comment on the statement, "The roads are not as safe as they used to be in 1960, as there are still more people killed on our roads."

End of Section

17. Barbara went for a walk in the city park. To cut across the rectangular park, she chose the path shown by the dotted line in the drawing below. At what angle, x , did Barbara cut across the park?



- 37.4°
- 38.5°
- 51.5°
- 52.6°

18. Sam wanted to find three consecutive even numbers that add up to 84. He wrote the equation $k + (k + 2) + (k + 4) = 84$. What does the letter k represent?

- The least of the three even numbers
- The middle even number
- The greatest of the three even numbers
- The average of the three even numbers

19. An ACC safety officer wanted to know whether their last month's television campaign in safety in the household was successful.
She did a telephone survey of 50 Wellington households.
What is one possible limitation in her survey?

20. The least common multiple of 8, 12, and a third number is 120.
Which of the following could be the third number?

- 15
- 16
- 24
- 32
- 48

21. The perimeter of a child's rectangular playground is 64 metres. The length and width of the playground are consecutive odd integers.
If the length (x) is the longer of the two dimensions, what is the width of the playground?

- 15 metres
- 17 metres
- 31 meters
- 33 metres

22. The table below shows the scores of a group of 11 students in a history test.

Score	Number of Students
90	1
80	3
70	4
60	0
50	3

What is the average (mean) score of the group to the nearest whole number?

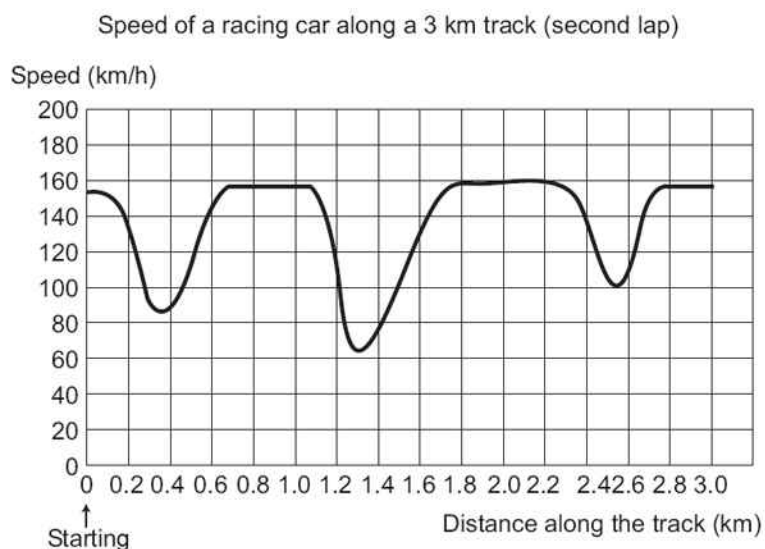
23. A pharmacist mixed some 10%-saline solution with some 15%-saline solution to obtain 100 mL of a 12%-saline solution.

How much of the 10%-saline solution did the pharmacist use in the mixture?

- 60 mL
- 45 mL
- 40 mL
- 25 mL

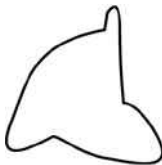
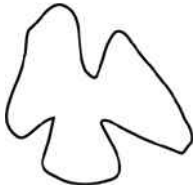
Use the following information to answer question 24..

This graph shows the speed of a racing car along a flat 3 kilometre track during its second lap.



24. Here are pictures of five tracks.

Along which one of these tracks was the car driven to produce the speed graph shown above?



End of Section

25. Triangles ABC and DEF are similar. The lengths of the sides of $\triangle DEF$ are 3 times the lengths of the corresponding sides of $\triangle ABC$.

How do the areas of the triangles compare?



The area of $\triangle DEF$ is 3 times the area of $\triangle ABC$.



The area of $\triangle DEF$ is 4 times the area of $\triangle ABC$.



The area of $\triangle DEF$ is 6 times the area of $\triangle ABC$.



The area of $\triangle DEF$ is 9 times the area of $\triangle ABC$.

26. Six candidates are running for two open school board seats.
How many different pairs of candidates can be elected?

- 15
- 12
- 11
- 30

Use the following information to answer question 27..

A baseball player's batting average is determined by dividing the number of safe hits by the number of turns at bat. Batting averages are expressed as decimals rounded to three places.

For example, a player who made 15 safe hits in 48 turns at bat would have a batting average of .313.

27. In the next 10 turns at bat, the player has 10 safe hits.

What is the new batting average?

End of Section

28. A laboratory has a 75 gram sample of radioactive material. The half-life of the material is 10 days. (This means that it takes 10 days for half of the initial mass to decay). The formula below can be used to find m , the remaining mass in grams, in terms of t , the number of **10-day intervals** that mass has been decaying.

$$m = 75(0.5)^t$$

Based on the formula, what is the mass of the laboratory's sample remaining after 30 days?

- 9.375 grams
- 11.25 grams
- 12.5 grams
- 22.5 grams

29. Simplify: $-10 + 2(4 + w)$

- $-32 - 8w$
- $-18 + 2w$
- $-2 + w$
- $-2 + 2w$

30. If $\angle QRS$ and $\angle XYZ$ are complementary, which must be **TRUE**?

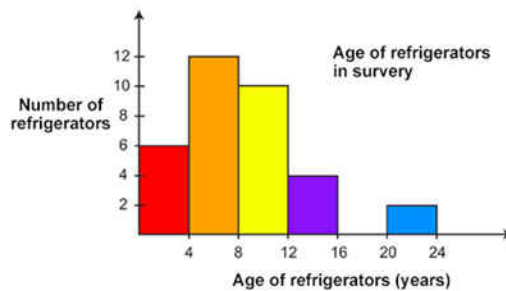
- One of the angles can measure between 90° and 180° .
- The sum of the measures of the angles is 90° .
- The sum of the measures of the angles is 180° .
- Both angles must measure more than 90° .

31. Dan baked some cookies. Sam took half of the cookies. Then Sue took half of the remaining cookies. Later, Lisa took half of the cookies that were left. When Dan came home, he saw only three cookies.

How many cookies did Dan bake altogether?

Use the following information to answer question 32..

This histogram shows the result of a survey of the ages of refrigerators, chosen at random, in Picton.



32. Complete this statement:

_____ % of refrigerators in Picton are less than 8 years old.

End of Section

33. What is the factored form of $3a^2 - 24ab + 48b^2$?

- $(3a - 8b)(a - 6b)$
- $(3a - 16b)(a - 3b)$
- $3(a - 4b)(a - 4b)$
- $3(a - 8b)(a - 8b)$

34. $\sqrt[8]{N} = 3^5$

In the equation above, what is the value of N , rounded to the nearest tenth?

35. Which of the following values of x makes the proportion below true?

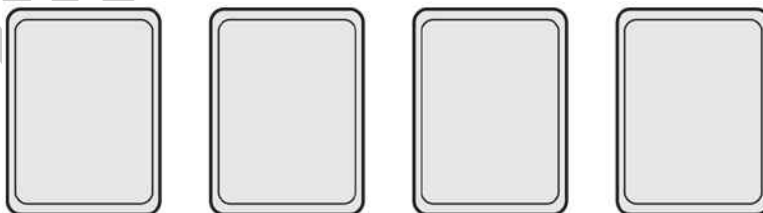
$$\frac{7}{4} = \frac{x-3}{x+3}$$

- 11
- 2
- 2
- 11

36. The sonar system of a submarine receives an echo back from a ship 5000 metres away after 6.1 seconds. It picks up an echo from a second ship after 8.4 seconds. Which proportion **could** be used to find the distance to the second ship?

- $\frac{6.1}{5000} = \frac{8.4}{x}$
- $\frac{6.1}{8.4} = \frac{x}{5000}$
- $\frac{8.4-6.1}{8.4} = \frac{x}{5000}$
- $\frac{2.3}{5000} = \frac{6.1}{x}$

37. Each of the letters M, A, T, and H appear on the reverse side of one of the four cards below (one letter per card), but not necessarily in that order. If the cards are turned over, what is the probability that they will be ordered so that they spell the word MATH?



- $\frac{1}{4}$
- $\frac{1}{12}$
- $\frac{1}{24}$
- $\frac{1}{48}$

38. If the equation $y = 2^x$ is graphed, which of the following values of x would produce a point closest to the x -axis?

$\frac{1}{4}$

$\frac{3}{4}$

$\frac{5}{3}$

$\frac{8}{3}$

39. Which equation is equivalent to $5x - 2(7x + 1) = 14x$?

$-9x - 2 = 14x$

$-9x + 1 = 14x$

$-9x + 2 = 14x$

$12x - 1 = 14x$

40. If x is a real number, for what value of x is the equation $\frac{3x-9}{3} = x - 3$ true?

All values of x

Some values of x

No values of x

Impossible to determine

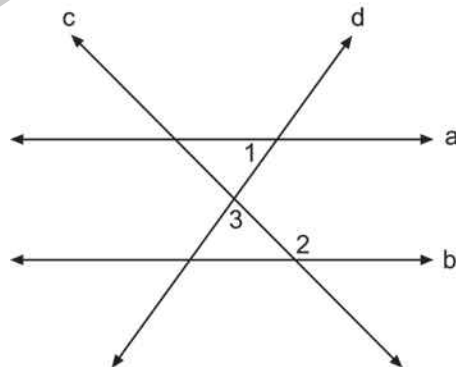
41. $(2 + m) - (7 - 4m)$ is equal to

- $-5 - 3m$
- $-5 + 5m$
- $9 - 3m$
- $9 + 5m$

42. Kim is making pizza for the school carnival.
If the radius of the pizza is doubled, how will the area change?

- The area will remain the same.
- The area will be two times as large.
- The area will be three times as large.
- The area will be four times as large.

43. The diagram below has the following properties:
Line a is parallel to line b .
 $m\angle 1 = 62^\circ$.
 $m\angle 2 = 122^\circ$.
What is $m\angle 3$?



- 56°
- 58°
- 60°
- 62°

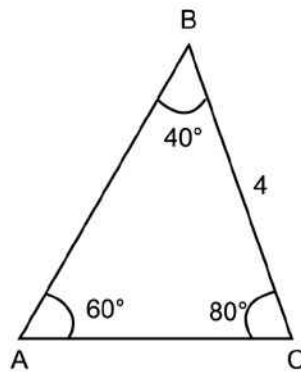
44. Calvin sees a bumper box of crunchie bars in the supermarket at a bargain price of \$10.

If he gives away 25% of them on the first day and $\frac{1}{3}$ of the remaining bars the next day he is left with 18.

How many bars were in his new \$10 box?

_____ bars

45. Which statement is **TRUE** for the given triangle?

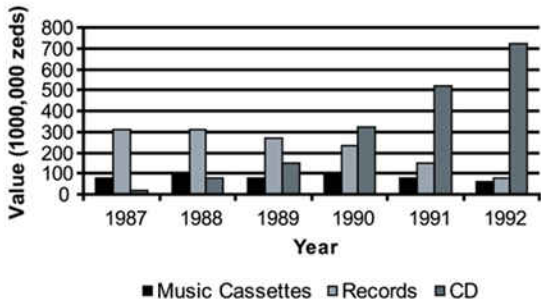


- $\frac{AC}{\sin 60} = \frac{4}{\sin 40}$
- $\frac{BA}{\sin 80} = \frac{4}{\sin 40}$
- $\frac{AC}{\sin 80} = \frac{4}{\sin 60}$
- $\frac{AC}{\sin 40} = \frac{4}{\sin 60}$

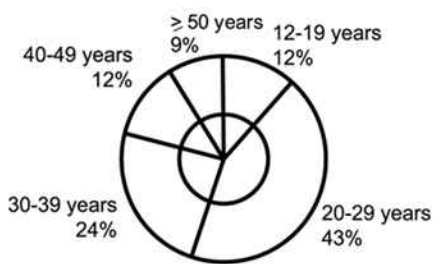
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46. The graphs give information about sales of CDs and other sound recording media in Zedland. Zeds are the monetary units used in Zedland.

Value of various sound recording media sold in Zedland (millions of Zeds)



CD sales according to age in 1992



With the aid of both graphs calculate how much money was spent by 12 - 19 year olds on CDs in 1992.

47. The graph of $y = 2x^2$ is:

- Wider than $y = x^2$
- Narrower than $y = x^2$
- The same width as $y = x^2$
- A reflection of $y = x^2$ in the y axis
- The same graph as $y = x^2$

48. Which of the following **MOST** accurately describes the translation of the graph $y = (x + 3)^2 - 2$ to the graph of $y = (x - 2)^2 + 2$?

- Up 4 and 5 to the right
- Down 2 and 2 to the right
- Down 2 and 3 to the left
- Up 4 and 2 to the left

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