

## Mathematics

### 3 Points — 1st Exam

#### Instructions for examinees

א. Duration of the exam: One and a half hours

ב. Exam structure and breakdown of points:

This exam has six questions.

Each question is worth 25 points.

You may answer as many questions as you like, but the maximum number of points you can earn is 100.

ג. Material that may be used during the exam:

- (1) A non-graphing calculator. You may not use the programming options of a programmable calculator. Use of a graphing calculator or programming options may lead to the disqualification of your exam.
- (2) Formula sheets (attached).
- (3) A Hebrew-foreign language / foreign language-Hebrew dictionary.

ד. Special instructions:

- (1) **Write all of your calculations and answers in the Hebrew test booklet.**  
**Do not write in the shaded margins.**
- (2) Explain all of your work, including calculations, in detail and in a clear and organized fashion. Lack of detail may lower your score or lead to the disqualification of your exam.
- (3) For draft paper, use pages in the **Hebrew test booklet** (including those at the end of the booklet). Use of other draft paper may lead to the disqualification of your exam.

**Good Luck!**

## מתמטיקה

### 3 יחידות לימוד - שאלון ראשון

#### הוראות לנבחן

א. משך הבחינה: שעה וחצי.

ב. מבנה השאלון ומפתח ההערכה:

בשאלון זה שש שאלות.

לכל שאלה — 25 נקודות.

מוותר לך לענות על מספר שאלות כרצונך,

אך סך הנקודות שתוכל לצבור לא יעלה על 100.

ג. חומר עזר מותר בשימוש:

(1) מחשבון לא גרפי. אין להשתמש באפשרויות

התכנות במחשבון הניתן לתכנות.

שימוש במחשבון גרפי או באפשרויות התכנות

במחשבון עלול לגרום לפסילת הבחינה.

(2) דפי נוסחאות (מצורפים).

(3) מילון עברי-לועזי/לועזי-עברי.

ד. הוראות מיוחדות:

(1) **כתוב את כל החישובים והתשובות ב**נוסח העברי של השאלון**.**

**אסור לכתוב על הפסים שבשוליים.**

(2) הסבר את כל פעולותיך, כולל חישובים, בפירוט ובצורה ברורה

ומסודרת.

חוסר פירוט עלול לגרום לפגיעה בציון או לפסילת הבחינה.

(3) לטיוטה יש להשתמש בדפים שב**נוסח העברי של השאלון** (כולל

הדפים שבסופו).

שימוש בטיוטה אחרת עלול לגרום לפסילת הבחינה.

**בהצלחה!**

## Questions

This exam has six questions. A complete answer is worth 25 points.

You may answer as many questions as you like, completely or partially,  
but the maximum number of points that you can earn is 100.

**Write all of your calculations and answers in the Hebrew test booklet.**

**Note! Explain all of your work, including calculations, clearly and in detail.**

**Lack of detail may lower your score or lead to the disqualification of your exam.**

### Algebra

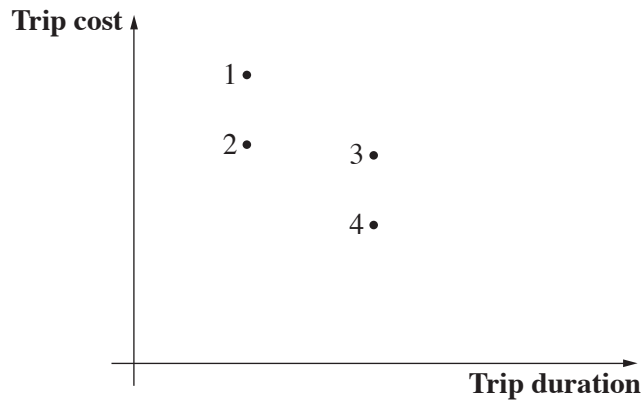
1. The price of an entrance ticket to a museum is 60 shekels for an adult and 40 shekels for a child.

A group of 90 people (adults and children) visited the museum.

The total cost of the entrance tickets for the entire group was 4,300 shekels.

How many adults and how many children were in the group?

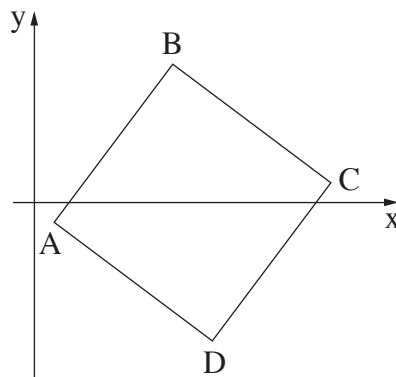
2. The graph below shows the duration and cost of four trips from City A to City B, by plane and by railroad.  
 Traveling by railroad takes more time than traveling by plane, but costs less.



- א. Orit traveled from City A to City B by railroad in first class, the most expensive section of the train. Which point on the graph shows the duration and cost of her trip? Explain.
- ב. Avital flew by plane from City A to City B in economy class, the cheapest section of the plane. Which point on the graph shows the duration and cost of her trip? Explain.
- ג. Which point on the graph shows the most expensive trip?
- ד. Edna traveled from City A to City B by bus. A trip by bus takes more time than traveling by railroad, but costs less. Add a fifth point to the graph that shows a possible duration and cost of Edna's trip. Explain.

3. The points A(1, -1) and B(7, 7) are two adjacent vertices of Square ABCD (see figure).

- א. Calculate the length of Side AB.
- ב. Calculate the area of the square.
- ג. Calculate the length of the diagonal of the square.

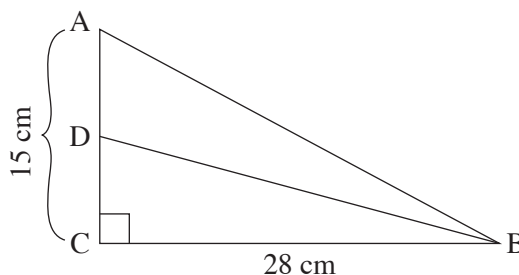


### Trigonometry

4. ABC is a right triangle ( $\angle ACB = 90^\circ$ ).  
BD is a median in Triangle ABC (see figure).

Given:  $BC = 28$  cm,  $AC = 15$  cm.

- א. Calculate the size of Angle CDB.
- ב. What is the size of Angle ADB?



## Probability and Statistics

5. The table below shows the distribution of the number of children per family, for all the families in a certain town.

|                                      |   |    |    |   |   |
|--------------------------------------|---|----|----|---|---|
| <b>Number of children per family</b> | 1 | 2  | 3  | 4 | 5 |
| <b>Number of families</b>            | 7 | 12 | 10 | 8 | 3 |

- א. Draw a bar chart that shows the distribution of the number of children per family in the town.
- ב. Calculate the average number of children per family in the town.
- ג. What is the median [חציון] number of children per family in the town? Explain.
- ד. What is the mode [שכיח] number of children per family in the town? Explain.
6. Two balanced, traditional dice [קוביות משחק הוגנות] are rolled and the sum of the obtained numbers is calculated.
- א. What is the probability that the sum of the numbers is 12?
- ב. What is the probability that the sum of the numbers is less than 5? Explain.
- ג. What is the probability that the sum of the numbers is odd? Explain.

**Good Luck!**

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**בהצלחה!**

זכות היוצרים שמורה למדינת ישראל  
 אין להעתיק או לפרסם אלא ברשות משרד החינוך