

## Mathematics

### 3 Points — 1st Exam

## מתמטיקה

### 3 יחידות לימוד - שאלון ראשון

#### Instructions for examinees

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

#### הוראות לנבחן

א. משך הבחינה: שעה וחצי.

#### 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.

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. 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.

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. Special instructions:

(1) **Write all of your calculations and answers in the Hebrew exam 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 exam booklet** (including those at the end of the booklet).

Use of other draft paper may lead to the disqualification of your exam.

ד. הוראות מיוחדות:

(1) **כתוב את כל החישובים והתשובות בנוסח 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) לטייטה יש להשתמש בדפים שבנוסח העברי של השאלון (כולל הדפים שבסופו).

שימוש בטייטה אחרת עלול לגרום לפסילת הבחינה.

**Good Luck!**

**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 exam 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. Towards the end of the year, a chain of clothing stores held a special sale, offering a 40% discount on all items in its stores.

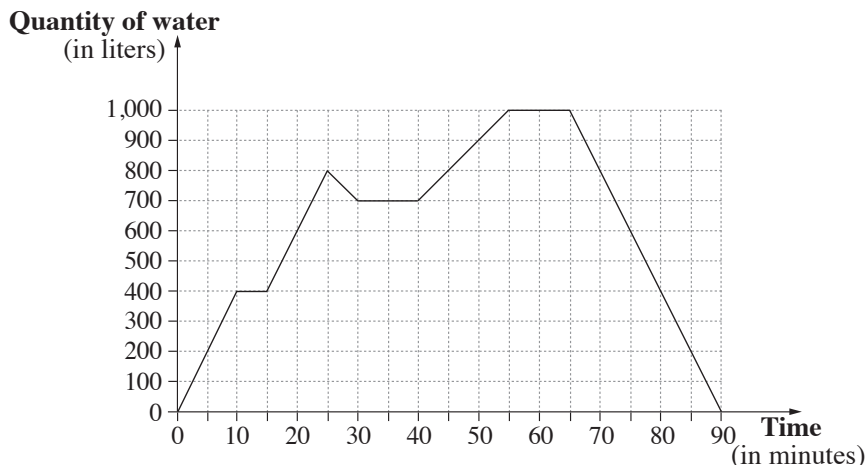
The price of a blouse was reduced by 64 shekels.

א. What was the price of the blouse before the special sale?

Noa bought 3 blouses before the special sale and 2 blouses at the reduced price.

ב. How much did Noa pay in total for all the blouses she bought?

2. The graph below shows the quantity of water in a container with a volume of 1000 liters, over a certain period of time.



Refer to the graph and answer Items א-ז.

- א. How much water was there in the container after 5 minutes?
  - ב. How much water entered the container between the 45<sup>th</sup> and the 50<sup>th</sup> minutes?
  - ג. (1) At what points in time did the container hold exactly 800 liters of water?  
(2) Between what minute and what minute was the container completely full?
  - ד. After the container filled up completely, it was emptied, as shown on the graph.  
At what rate was the container emptied (in liters per minute)?
3. The second term of an arithmetic sequence is 4 and the fourth term is 10.
- א. What is the common difference [הפרש] of the sequence? Explain.
  - ב. What is the first term of the sequence? Explain.
  - ג. Calculate the sum of the first 19 terms of the sequence.

4. Given: the equations of two lines  $y = 3x - 3$  and  $y = 2x + 2$ .

The two lines intersect at Point M.

- א. Find the coordinates of Point M.
- ב. Does the line whose equation is  $y = -3x + 15$  pass through Point M? Explain.
- ג. Calculate the distance of Point M from the origin.

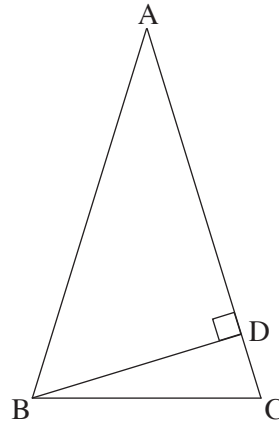
### Trigonometry

5. ABC is an isosceles triangle ( $AB = AC$ ).

BD is the height to Side AC (see figure).

Given:  $BC = 8$  cm, the size of the angle at the  
base of the triangle is  $70^\circ$ .

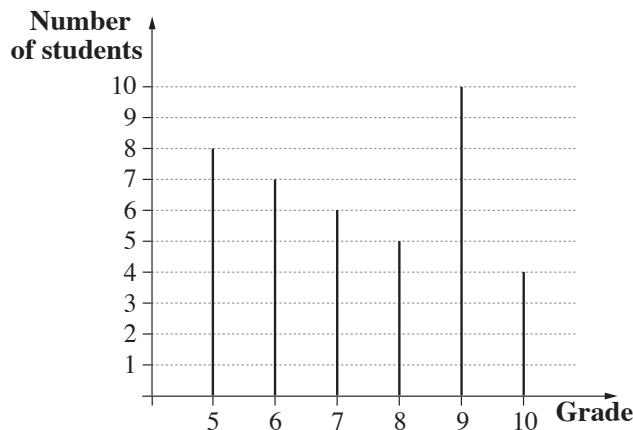
- א. Calculate the length of the height BD.
- ב. Calculate the length of a leg in Triangle ABC.
- ג. Calculate the area of Triangle ABC.



## Probability and Statistics

6. A certain class was given a Tanach test. All the students in the class took this test.

Below is a bar chart that shows the distribution of grades gained on the test.



- א. How many students are there in this class?
- ב. Calculate the average grade on the test.
- ג. What was the median [חציון] grade on the test? Explain.
- ד. What was the mode [שכיח] grade on the test? Explain.

One of the students in the class is chosen at random.

- ה. What is the probability that his grade is lower than the average grade?
- ו. What is the probability that his grade is lower than 6?

**Good Luck!**

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**בהצלחה!**

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