

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.

כל 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.

חסר 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. The cost of one table and 4 chairs is 1,500 shekels.

The cost of two tables and 6 chairs is 2,500 shekels.

(The price of a table is fixed, and the price of a chair is fixed.)

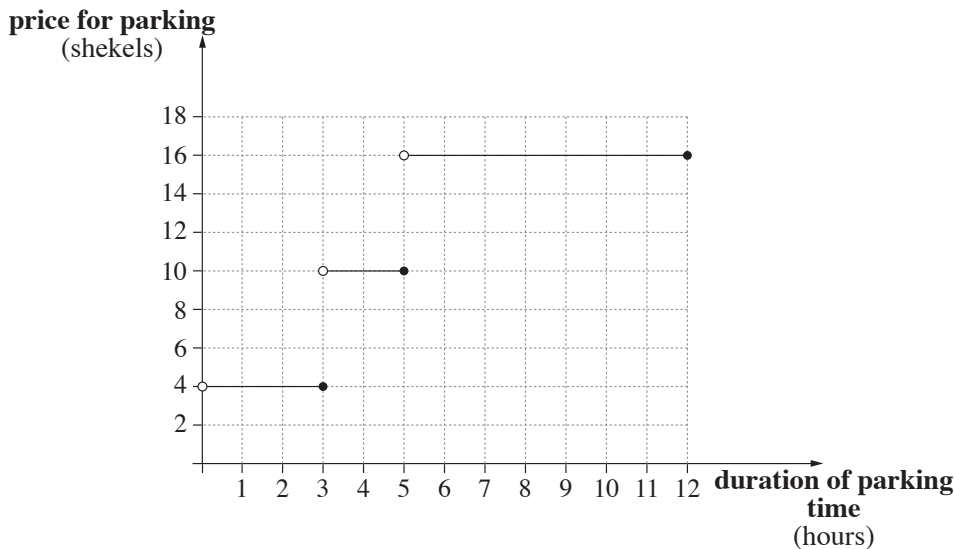
א. Calculate the price of a table and the price of a chair.

ב. What will be the price of 4 chairs, if the price of a chair increases by 20%?

2. Mr. Cohen travels by car from his home to the city center, where he parks the car in one of two parking lots: Parking Lot I or Parking Lot II.

In **Parking Lot I**: The price is 14 shekels per day and is not dependent on the duration of parking time.

In **Parking Lot II**: The price depends on the duration of parking time. The graph below shows the relation between the duration of parking time (in hours) and the cost of parking.



- א. On Sunday, Mr. Cohen parked his car in Parking Lot II at 8:00 am and drove the car out of the parking lot at 12:00 noon. How much did Mr. Cohen pay for parking that day?
- ב. On Monday, Mr. Cohen knew that he would be spending 7 hours in the city center, so he chose the parking lot where the cost of parking for 7 hours would be lower. How much did Mr. Cohen pay for parking that day?
- ג. If Mr. Cohen has only 8 shekels, what is the maximum number of hours he can park his car?
- ד. On Tuesday, Mr. Cohen decided to park his car in Parking Lot II, because the cost of parking in that lot would be lower. For how many hours, at the most, did he intend to leave his car in that lot?

3. A worker's wage for his first month of work was 5,000 shekels.

For each subsequent month, his wage was 53 shekels higher than the wage he had received the previous month.

- א. What was this worker's wage for his 12th month of work? Show detailed calculations.
- ב. How much did this worker earn in total for his first 12 months of work? Show detailed calculations.

4. The figure to the right describes the quadrilateral OABC (O — the origin).

Point C is located on the x-axis.

Given: The equation of the line AC is

$$y = -\frac{1}{2}x + 5.$$

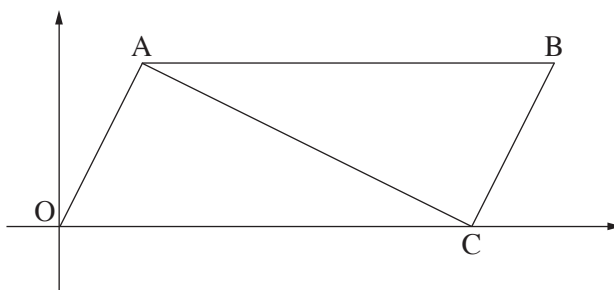
- א. Find the coordinates of Point C.

Given: The equation of the line OA is $y = 2x$.

- ב. Find the coordinates of Point A.

Given: The line BC is parallel to the line OA.

- ג. Find the equation of the line BC.



Trigonometry

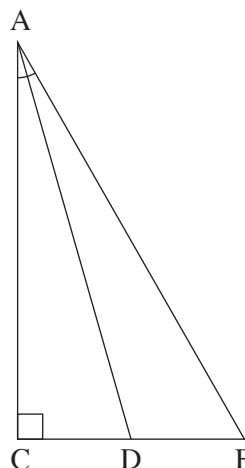
5. In the right triangle ACB ($\angle ACB = 90^\circ$)

the lengths of the legs are: $AC = 7$

$$CB = 4.$$

D is a point on the leg CB, such that AD bisects the angle CAB (see figure).

- א. Calculate the size of the angle CAB.
- ב. Calculate the length of AD.



Probability and Statistics

6. On each side of a balanced dice [קובייה מאוזנת] a number is marked. Three of the sides are marked with the number 1, two of the sides are marked with the number 2, and the remaining side is marked with the number 3.

The dice is rolled once.

- א. What is the probability that the number 2 will turn up?
- ב. What is the probability that a number lower than 3 will turn up?
- ג. What is the probability that an **odd** number will turn up?

Good Luck!

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בהצלחה!

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