

The State of Israel
Ministry of Education

Exam Type:

א. *Bagrut* for high schools

ב. *Bagrut* for external students

Exam Date: Summer 2016, *Moed Bet*

Exam Number: 035801, 311

Appendix: Formula sheets for 3 points

English Translation (3)

מדינת ישראל
משרד החינוך

סוג הבחינה:

א. בגרות לבתי ספר על-יסודיים

ב. בגרות לנבחנים אקסטרניים

מועד הבחינה: קיץ תשע"ו, מועד ב

מספר השאלון: 311, 035801

נספח: דפי נוסחאות ל-3 יחידות לימוד

תרגום לאנגלית (3)

Mathematics
3 Points — First Questionnaire

מ ת מ ט י ק ה
3 יחידות לימוד - שאלון ראשון

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 the 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 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 the exam.
- (3) For draft paper, use pages in the **Hebrew exam booklet** (including those at the end of the booklet) or paper you receive from the proctors. Use of other draft paper may lead to the disqualification of the exam.

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 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) או בדפים שקיבלת מהמשגיחים. 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 the exam.

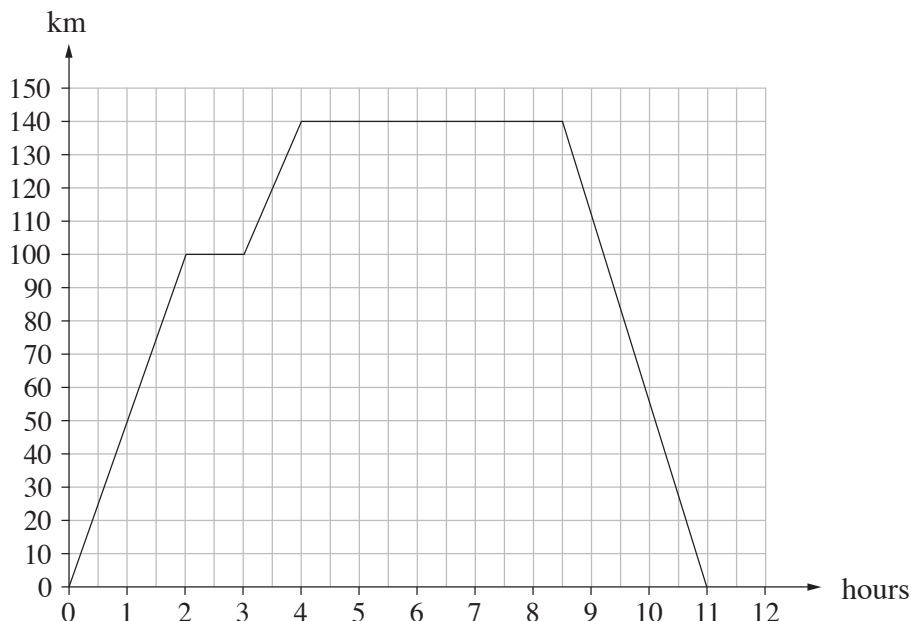
Algebra

1. The price of a regular ticket for a movie is 36 shekels and the price of a discounted ticket is 30 shekels. A group of 20 people bought tickets to a movie and paid a total of 648 shekels for the tickets.
 - א. By what percentage is the price of a regular ticket higher than the price of a discounted ticket?
 - ב. How many regular tickets and how many discounted tickets did this group buy?

2. A truck drove out of Tel Aviv.

The truck stopped at two army bases and then returned to Tel Aviv.

The graph below depicts the distance of the truck from Tel Aviv (in km), from the time it left Tel Aviv until the time it arrived back in Tel Aviv, as a function of time (hours).



Study the graph and answer the items below.

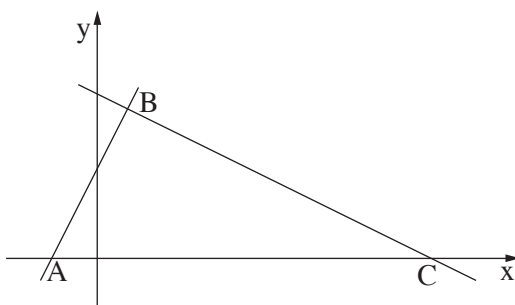
- א. How long did the truck stay at the first base?
- ב. (1) How much time did it take for the truck to reach the second base, from the time it left Tel Aviv?
 (2) How long did the truck stay at the second base?
- ג. What is the distance between the first base and the second base?
- ד. What was the total distance traveled by the truck, from the time it left Tel Aviv until it arrived back in the city?
- ה. At what speed did the truck travel on its way from the second base back to Tel Aviv?

3. A hall contains 20 rows of chairs. The number of chairs in each row is greater than the number of chairs in the preceding row by a constant number.

The first row contains 14 chairs. Row 11 contains 44 chairs.

- א. Find the difference between the number of chairs in a row and the number of chairs in the preceding row.
- ב. How many chairs are there in the 15th row?
- ג. What is the total number of chairs in the hall?

4. The line whose equation is $y = 2x + 6$,
 the line whose equation is $y = -\frac{1}{2}x + 11$ and
 the x-axis form Triangle ABC,
 as shown in the figure.

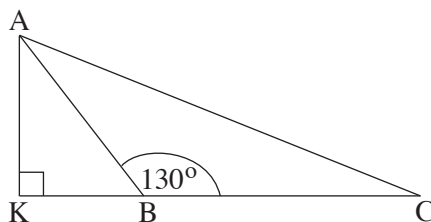


- א. Find the coordinates of Vertices A, B and C.
- ב. Find the distance between the two vertices of the triangle that are located on the x-axis.
- ג. Calculate the area of Triangle ABC.

Trigonometry

5. In the right triangle AKC ($\angle AKC = 90^\circ$), the point B is located on the side KC.

Given: $AB = 6$ cm, $BC = 9$ cm and $\angle ABC = 130^\circ$ (see figure).



- א. (1) Find the size of the angle ABK.
 (2) Calculate the length of the side AK.
- ב. Calculate the length of the segment KB.
- ג. Calculate the area of the triangle AKC.
- ד. Calculate the area of the triangle ABC.

Probability

6. Given: an unweighted (normal) dice [קובייה מאוזנת] that has one of the letters א, ב, ג, ד, ה or ו on each of its sides. A different letter is marked on each side.
- א. Gil throws the dice once. What is the probability that the dice will land on the letter א?
- ב. Gil throws the dice twice.
What is the probability that the dice will land twice on the letter ג?
- ג. Gil and Matan are playing a game in which each of them throws the dice twice.
Gil will win the game if the dice lands on the letter א on one of his throws (the first or the second) and on the letter ג on the other throw.
Matan will win the game if the dice lands on the letter ד on both of his throws.
Do both players have an equal chance of winning the game? Explain.

Good Luck!

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בהצלחה!

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