



هيئة جودة التعليم والتدريب
Education & Training Quality Authority

Mathematical Skills – Grade 12

Dealing with Problems

- Finding procedures for solving problems
 - Searching for solutions
 - Making choices and decisions
-

Practice Items

- Sample of Practice Items -

- 1 A stone truck carried a full load of stones from point A to point B at an average speed of 40 km/h over 30 minutes, unloaded the stones in 5 minutes, then returned from point B to point A at a different average speed, covering the same distance with a total time of 55 minutes for the entire trip.

What is the average speed of the truck from point B to point A?

- A 20 km/h
 - B 40 km/h
 - C 48 km/h
 - D 60 km/h
- 2 One of the institutions evaluates a football league among 10 teams, where each team plays two matches with the rest of the teams, one at the team's stadium and the other at the opponent's stadium.

The points system for the institution's league differs from the usual system, as the winning team in any match gets 8 points, 3 points in case of a draw, and only 1 point in case of a defeat.

At the end of the league, one of the teams gets 65 points.

What is the maximum number of matches in which the team drew to get 65 points?

- A 6 matches
- B 12 matches
- C 13 matches
- D 18 matches

- Sample of Practice Items -

- 3 A clothing store offers discounts on the items listed in the table below:

Items on Offer	Price
Set of two trousers	BD 20
Set of three shirts	BD 12
Set of five ties	BD 5
Coat	BD 22

Zaid bought 20 pieces of three different types of items on sale and paid 77 BD.

Which combination of the following items did Zaid buy?

- A** Trousers, shirt, tie
 - B** Trousers, shirt, coat
 - C** Trousers, tie, coat
 - D** Shirt, tie, coat
- 4 It is known that the PIN code for the bank card (ATM) in most banks consists of four digits. Mahmoud used four different and consecutive numbers to form his PIN code, so that the PIN represents his birth date. The first and second digits from the left represent the day of his birth, and the first and second digits from the right represent the month of his birth. The smallest number among the four numbers is the first from the right.

Which of the following represents Mahmoud's bank card PIN code?

- A** 0312
- B** 2301
- C** 2310
- D** 3210

- Sample of Practice Items -

- 5 On a cattle farm, each cow has a tag on its ear with a number representing the cow. This number consists of five digits: the first three digits from the right indicate the cow's weight, and the fourth and fifth digits indicate its milk production. For example, the cow code 19485 represents a cow weighing 485 kg and producing 19 kg of milk daily. The weights and milk quantities are whole numbers, with cow weights ranging from 380 kg to 580 kg and milk production ranging from 15 kg to 25 kg daily.

The farm owner found one of the cows with all the digits of its code erased and remembered that all the digits were different odd numbers but could not recall their order.

What is the smallest number that represents this cow's code?

- A 13579
- B 15379
- C 15391
- D 15397

- Sample of Practice Items -

- 6 One of the tourism agencies offers a package consisting of 4 travel trips to visit the most famous tourist attractions in the three continents Asia, Europe, and Africa. The package requires tourists to choose at least one country from each continent:

The table below shows the countries that can be visited in the three continents.

Asia	Europe	Africa
Turkey	France	Egypt
Russia	Spain	Tunisia
Oman	Greece	Morocco
Indonesia	Italy	Algeria
Malaysia	Iceland	Comoros
Singapore	Switzerland	South Africa

Which group of countries **cannot be** chosen by tourists?

- A Turkey, Spain, Iceland, South Africa
- B Russia, Switzerland, Egypt, Comoros
- C Oman, Italy, Morocco, Algeria
- D Malaysia, Singapore, France, Greece

- Sample of Practice Items -

- 7 The mathematics teacher assesses his students with three monthly tests and a final exam
- 25 marks for each monthly test.
 - 50 marks for the final exam.
 - The highest two marks of the three monthly tests are considered, and the lowest marks is discarded.
 - The sum of the two highest marks and the final exam marks is out of 100.
 - A student passes the subject if he gets a total marks of 50 or more, and must also get at least a quarter of the final exam marks.

Ahmed got 13, 15, and 14 in the three monthly tests, respectively. What is the minimum marks Ahmed should achieve in the final exam to pass the mathematics subject?

- A** 12.5
- B** 21
- C** 22
- D** 23

- Sample of Practice Items -

- 8** A tractor consumes 40 to 50 litres of diesel to plow one acre of agricultural land, and the fuel tank capacity of the tractor is 170 litres of diesel, with the fuel level in the tank is not allowed to drop below 20 litres.

A farmer used the tractor to plow a farm with an area of 10 acres, and the fuel tank was full at the beginning of his work. Farmers use diesel cans, each with a capacity of 30 litres, to refuel during the plowing process.

What is the minimum number of diesel cans the farmer will need to plow the farm?

- A** 8
- B** 9
- C** 11
- D** 12

- Sample of Practice Items -

- 9 The Algerian team is participating in the Arab Basketball Championship held in Qatar. The opening match of the tournament will be between Bahrain and Algeria next Saturday at 20:00 Qatar local time. The coach of the Algerian team wants to arrive to Qatar at least 35 hours before the match so that the players can get some sleep and rest, then train in preparation for the match. The Algerian team travels to Doha using Air Algeria with one transit in Cairo. The flight duration from Cairo to Qatar is 3 hours. The flight schedule between Algeria and Cairo was presented to the coach, showing the different flights and the duration of the transit in Cairo, noting that Qatar time is one hour ahead of Cairo time.

Departure time (Algeria time)	Arrival Time (Cairo Time)	Duration of transit in Cairo
Wednesday 23:55	Thursday 04:40	14 hours and 20 minutes
Thursday 09:35	Thursday 14:20	4 hours and 40 minutes
Thursday 18:45	Thursday 23:30	6 hours and 30 minutes
Friday 00:05	Friday 04:50	1 hour and 10 minutes

What is the time of the last flight that the Algerian team can take from Algiera?

- A Wednesday 23:55
- B Thursday 09:35
- C Thursday 18:45
- D Friday 00:05

- Sample of Practice Items -

- 10** Fawzia sells a regular vine leaves dish for BD 1.200, and a spicy vine leaves dish for BD 1.350.

One day, Fawzia's income from selling both types of vine leaves was BD 42.

What is the maximum total number of dishes sold of both types?

A 32

B 33

C 34

D 35

- 11** Youssef has a sandwich truck, famous for selling beef and chicken burgers. He sells the chicken burger for 600 fils, and the beef burger for 750 fils.

Last Friday night, Youssef's income from selling both types of burgers was BD 124.5, with the number of chicken burgers was more than 70 burgers, and beef burgers more than 90 burgers.

What is the maximum possible difference between the number of beef burgers and chicken burgers sold?

A 13

B 22

C 31

D 40

- Sample of Practice Items -

- 12** Hamad works in the field of marketing, which costs him an additional amount on his bill due to international calls to various regions. The telecommunications company charges the cost of international calls per minute, and when Hamad speaks for a fraction of a minute, the full minute is charged on his bill. The table below shows the cost of international calls per minute for different regions.

Region	X	Y	Z
Cost/Minute (Fils)	29	40	55

The total amount for calls to areas X, Y, and Z in Hamad's bill is BD 0.673, and Hamad did not call area X for more than 10 minutes.

What is the maximum number of minutes Hamad could have called area Z?

- A 1
- B 2
- C 9
- D 14

- Sample of Practice Items -

- 13 Rakan wants to buy a new house for his family with the largest possible space. He searched through an online real estate office for a house whose purchase price, including administrative costs and registration fees, does not exceed BD 160,000.

The table below shows the house area and its price.

House	Area (M ²)	Price (BD)
First	180	144,000
Second	200	150,000
Third	220	155,000
Fourth	240	156,000

The registration fee for purchasing a property at the Land Registry is 2% of the property's value. If the property is registered within 60 days of purchase, 1.7% of the registration fee is discounted.

The real estate office charges 1% of the property's price as administrative fees.

What is the largest house Rakan can buy and register at the Land Registry within 60 days, including administrative fees?

- A First
- B Second
- C Third
- D Fourth

- Sample of Practice Items -

- 14 Musa and his six friends want to travel to Mecca. He researched flights from Bahrain to Jeddah, and the Haramain train services from Jeddah Airport to Mecca. The table below shows the available flights from Bahrain Airport to Jeddah Airport on a particular day, their departure times, prices per person, and durations.

The Journey	Departure time	Price (BD)	Journey's Duration
First	09:35	114	Two hours and thirty-five minutes
Second	12:30	128	
Third	18:00	121	
Fourth	19:05	73	

When a passenger arrives at King Abdulaziz International Airport in Jeddah, he takes at least 45 minutes to complete the procedures until reaching the train station. He must arrive at least 15 minutes before the train departure. The table below shows the Haramain train schedule from the airport to Mecca. Note that the journey duration is 54 minutes, and the ticket price per person is BD 7.

The Journey	1	2	3	4	5	6	7
Departure time	10:35	12:15	15:35	17:35	18:35	20:15	22:35

Three friends cannot travel from Bahrain before 11:00. They all agreed to be in Mecca before 23:00 on the same day.

What is the least amount all the friends can pay for their trip from Bahrain to arrive to Mecca?

- A BD 560
- B BD 840
- C BD 868
- D BD 889

- Sample of Practice Items -

- 15** Marwan prefers to buy his clothes from a men's clothing store due to its fixed prices for each product. Marwan wants to buy at least two pairs of trousers and at least two shirts from the store.

The store sells each pair of trousers for BD 10 and each shirt for BD 7.

When he visited the store, Marwan was surprised to find a general offer: buy two items of the same type and get the third for free of the same type.

Marwan wants to buy the maximum number of items possible from the store with an amount not exceeding BD 50.

What is the maximum number of items Marwan can buy from the store with an amount not exceeding BD 50?

- A** 6
- B** 7
- C** 9
- D** 10

- 16** Faisal goes to a sports club to watch a volleyball match every weekend. He found that when he leaves his house at a certain time and drives his car at the maximum allowed speed of 100 km/h, he arrives two minutes before the match starts. However, when he drives his car at a speed of 80 km/h, he arrives four minutes late.

What is the distance Faisal travels from his home to the sports club?

- A** 8 km
- B** 32 km
- C** 40 km
- D** 72 km

- Sample of Practice Items -

- 17** A construction contractor wants to purchase a number of 1500- litres tanks to provide water for building users, including a factory with 160 employees, a medical residence accommodating 180 people, and 3 hotels each accommodating 215 people, all located in different areas. The table below shows the average amount of water in litres needed per person daily according to the type of building.

Building Type	The average litres daily needed by each person.
Factory	45
Medical Housing	115
Hotel	135

How many tanks does the contractor need to purchase at a minimum?

- A** 39
- B** 59
- C** 77
- D** 79

- Sample of Practice Items -

18 Khalid wants to choose an access code for his mobile phone consisting of 6 different digits arranged from left to right. Khalid's conditions for this secret code are:

- The sum of the first two digits equals the third digit.
- The product of the first two digits equals the fourth digit.
- No two consecutive digits are odd.
- The digits 5 and 7 are not included.

What is the maximum number of access codes that Khaled can create?

- A** 6
- B** 12
- C** 20
- D** 24

- Mark Scheme -

Question No.	Answer Key
1	D
2	C
3	C
4	C
5	D
6	D
7	B
8	B
9	B
10	C
11	C
12	B
13	C
14	D
15	C
16	C
17	D
18	D