"To be in the doldrums" in the above title means "to be in a bad situation", in this case, "to be without a job."

One of these mathematicians below is in the doldrums.

Tick ✓ the picture that best represents the meaning of this expression.
TASK B

1. According to the title "Mathematicians in the Doldrums", which of the questions below would you expect to be answered in the passage?
   
a. Is unemployment a common problem in the mathematician’s world?

b. Can mathematics help to solve real-life problems?

c. Can industry employ mathematicians?

d. Should mathematicians be prepared to perform managerial roles?

e. Why is it difficult to teach mathematics to university students?

f. Are there too many maths’ faculties in US universities?

2. Write down three more questions which you expect to be answered in the text.

   a. 
   
   b. 
   
   c. 

II. FACE TO FACE WITH THE TEXT

When reading, it is relevant to distinguish between important and unimportant information. Sometimes you will only need to know the main ideas of the text, while in other cases, you will need to study the article more closely.
Mathematicians in the Doldrums
In the early 1970s, mathematicians with newly minted Ph.D.s faced a horrendous job market in the United States. Their plight led to a flood of reports calling for better master’s programs, an expanded postdoc system, and curriculum reform.

Plus ça change. The employment outlook is even more bleak today, says a new report from a task force put together by the American Mathematical Society (AMS).* And the recipe for improving the situation is strikingly like that proposed, but largely ignored, 20 years ago.

According to the AMS survey, 5% of the 1990-91 new doctorates were still unemployed in March of this year. That may seem low at a time when overall unemployment in the United States is close to 8%, but in the years since 1977, the previous high for spring unemployment among mathematicians had been only 3%. The influx of mathematicians from Eastern Europe and the former Soviet Union is partly to blame for the job troubles, the report says. In 1990-91, these immigrants accounted for 13% of new Ph.D.s hired in doctorate-granting departments (see chart).

But the report points to a more fundamental problem: New math Ph.D.s are prepared for, and invariably turn to, academia for their first job. Mathematicians need to expand their employment horizons and consider industry—an option most still scorn and for which they are not prepared, says the task force. “I think we’re going to have to change the curriculum. Graduate schools have to broaden the arena for which they are educating,” says Donald Lewis, head of the University of Michigan’s math department and chairman of the task force that produced the report. Among other recommendations, the task force calls for more professional master’s programs that emphasize applying math to real-life problems and an increase in postdoctoral support.

*Employment and the U.S. Mathematics Doctorate
Which of the following paragraphs best summarises the main idea of the text?

___ a. Immigration of mathematicians from Eastern Europe and the former Soviet Union to the USA has caused job problems in the 90's. From 1990 to 1991, these newcomers accounted for 13% of the new Ph.Ds hired in the United States.

___ b. Since the 70's mathematicians in the USA have been facing job problems. Now in the 90's, according to a report of the AMS, the inflow of mathematicians from Eastern Europe and the former Soviet Union and the need to apply maths to real-life situations, have made their situation worse.

___ c. In the United States most immigrants from Eastern Europe and the former Soviet Union hold a doctorate in maths, but they are unemployed because they do not have the necessary preparation to apply this science to real-life situations.

___ d. Twenty years ago mathematicians recommended the improvement of masters' programmes, the expansion of postdoctorate system, and the reform of the curriculum in order to stop unemployment in their profession in the USA; but it is only now in the 90's, when the problem has become worse, that universities have considered those earlier recommendations.
**TASK B**

The following words or expressions are included in the article. Match them with the corresponding meaning that they have in this text. Only look them up in the dictionary if it is absolutely necessary. After completing your task, compare your answers with a classmate’s. To do this exercise read the text again.

<table>
<thead>
<tr>
<th>WORDS OR EXPRESSIONS</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newly minted (line 2)</td>
<td>1. To have a negative opinion about</td>
</tr>
<tr>
<td>Plight (line 4)</td>
<td>2. Probabilities for the future</td>
</tr>
<tr>
<td>Plus ça change (line 9)</td>
<td>3. Group of people gathered to do something specific</td>
</tr>
<tr>
<td>Outlook (line 10)</td>
<td>4. Notably, noticeably, extremely</td>
</tr>
<tr>
<td>Bleak (line 10)</td>
<td>5. Condition (usually bad)</td>
</tr>
<tr>
<td>Task force (line 12)</td>
<td>6. Nothing really changes</td>
</tr>
<tr>
<td>Strikingly (line 15)</td>
<td>7. Depressing</td>
</tr>
<tr>
<td>Blame (line 30)</td>
<td>8. Recently acquired, freshly completed</td>
</tr>
<tr>
<td>Scorn (line 43)</td>
<td>9. To place responsibility for something</td>
</tr>
</tbody>
</table>
Mathematicians in the Doldrums

In the early 1970s, mathematicians with newly minted Ph.D.s faced a horrendous job market in the United States. Their difficult situation led to a flood of reports calling for better master's programs, an expanded postdoc system, and curriculum reform.

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But the report points to a more fundamental problem: New math Ph.D.s are prepared for, and invariably try, academia for their first job. Mathematicians need to expand their employment horizons and consider industry—an option most still look down on and for which they are not prepared, says the task force. "I think we're going to have to change the curriculum. Graduate schools have to widen the arena for which they are educating," says Donald Lewis, head of the University of Michigan's math department and chair of the task force that produced the report. Among other recommendations, the task force calls for more professional master's programs that emphasize applying math to real-life problems and an increase in postdoctoral opportunities.

*Employment and the U.S. Mathematics Doctorate

Math faculty hires, 1991. Immigrants, especially those from former Eastern bloc countries, face stiff competition.
**TASK D**

Look at the questions you asked and were asked in Task B in "Reflecting Upon the Title" and tick ✓ the ones which were considered in the text.

<table>
<thead>
<tr>
<th>Questions in exercise 1</th>
<th>Questions in exercise 2</th>
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<tbody>
<tr>
<td>a.</td>
<td>a.</td>
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<tr>
<td>b.</td>
<td>b.</td>
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<tr>
<td>c.</td>
<td>c.</td>
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<tr>
<td>d.</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td></td>
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<tr>
<td>f.</td>
<td></td>
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</table>

**TASK E**

According to the text, indicate if the following statements are True "T" or False "F".

☐ 1. The real problem is that Americans do not like immigrants, because they take the best jobs.

☐ 2. Graduated mathematicians in the USA suffer from unemployment.

☐ 3. Mathematicians are unprepared to apply their knowledge to real-life situations.

☐ 4. Between 1977 and 1990 the unemployment rate was high amongst professionals.

☐ 5. The problem is that the author does not like immigrants.

☐ 6. In 1991, 63% of the mathematicians in the USA were immigrants.
III. JUDGING AND PROPOSING SOLUTIONS

TASK A

RE-EDITING "MATHEMATICIANS IN THE DOLDRUMS"

You are the author of the article "Mathematicians in the Doldrums". You are asked to cut out part of the text because it is far too long for the space left in the current issue of the journal Science. Otherwise, you will have to wait and publish it in the next issue coming out in three months' time or try to publish it in another magazine.

Select the most appropriate option to reduce the article and discuss the reasons for your choice with your partner.

Would you take out

___ 1. the graph and the caption?
___ 2. paragraph I and IV?
___ 3. paragraph I and III?
___ 4. paragraph II?
___ 5. paragraph III and the graph?
A friend of yours finished sculpture at a school of arts, 10 years ago. You recently met him in a Pizzeria. He has tried different ways of earning a living; for example, selling his sculptures, opening a framing shop, teaching and designing tee-shirts. Now he is designing earrings made of bronze and copper.

1. Look at the reasons the artist gave you to explain why he has tried so many jobs. Say if you think they are "Good" reasons "G" or; "Bad" reasons "B". Give reasons for your choice. Compare your answers with a classmate.
He said, "I have tried many jobs because ..."

___ a. I discovered that I was not good at arts.
___ b. I think designing earrings is art too.
___ c. it is much easier to sell earrings than sculptures.
___ d. earning a living was not included in the art school curriculum.
___ e. earning a living is more important than art.
___ f. Business Management was not included in the art school curriculum.
___ g. I was not orientated towards being employed as an artist.
___ h. people do not spend money on sculptures, they think they are a luxury.

2. Now, circle the alternatives that you would choose if you were in the artist’s shoes. Complete the list with more of your own.

If I were in the artist’s shoes, I would ..... 

a. keep on designing earrings.
b. buy a taxi.
c. take another degree.
d. ask for a marketing advisor.
e. keep on making sculptures.

f.
g.
h.
SELF-EVALUATION FORM

- NAME OF THE ARTICLE: __________________________________________
- AUTHOR: ______________________________________________________
- SOURCE: ______________________ DATE: __________ __________
- PURPOSE OF THE TEXT: ________________________________________
- KEY WORDS __________________________________________________
- TASKS I LIKED BEST ____________________________________________
- THINGS THAT I HAVE LEARNT: __________________________________
- OPINIONS ABOUT THE TEXT: ____________________________________
- TOPICS I WANT TO GO INTO MORE DEEPLY: ________________________
- EXTRA ARTICLES I HAVE READ: __________________________________
**STRATEGIES APPLIED:**

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<td></td>
<td>Using imagery</td>
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<td></td>
<td>Using keywords</td>
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<td></td>
<td>Getting the idea quickly</td>
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<td>Taking risks wisely</td>
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<td></td>
<td>Asking for correction</td>
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<td></td>
<td>Cooperating with peers</td>
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<td></td>
<td>Becoming aware of others’ thoughts and feelings</td>
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<td></td>
<td>Solving problems</td>
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</tbody>
</table>
I. REFLECTING UPON THE TITLE

TASK A

These activities are related either to Teaching or to Research. Mark with a "T" the ones more related to Teaching and with an "R" the ones more related to Research.

1. Facilitating learning processes
2. Finding new facts
3. Posing hypotheses
4. Educating
5. Conducting an experiment
6. Investigating
7. Counselling
8. Checking the attendance
9. Assessing performance
TASK B

*What do you think research is about?*

Discuss your choices

☐ 1. Acquiring fame.

☐ 2. Collecting data.

☐ 3. Earning money.

☐ 4. Winning prizes.

☐ 5. Getting status.

☐ 6. Formulating responses to a problem.

☐ 7. Others ____________________________________________

TASK C

Research may be carried out in many different forms and places. From the choices given below, select the place where you would like to conduct your investigation. Justify your answers.

*I would carry out my own research ........

___ 1. in a classroom setting.
___ 2. in a laboratory.
___ 3. in a library.
___ 4. in a factory.
___ 5. at home.

Your reasons

<table>
<thead>
<tr>
<th>Your reasons</th>
<th>Your reasons</th>
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</thead>
</table>
Teaching vs. Research

Norman Hackerman, ex-president of Rice University and former chairman of the National Science Board, has become a "grenade thrower" on the subject of the need for better teaching (as opposed to merely better research) at U.S. universities, according to a government aide who heard him speak recently. Hackerman knows the terrain well. He's a research chemist at the University of Texas who won an early federal research grant in the 1940s from an agency then known as the Office of Inventions, later the Office of Naval Research. Back then, he says, the reason for providing research funds to professors was to maintain faculty members at the "peak of their creative powers," in the hope that this would "induce the same thing in their students." The government's goal was to improve education, he claims, and "the bonus was the science that was produced." Today, the objective of federal support is to produce science, "and the education is looked on as a bonus. That's all wrong," Hackerman argues.

"The current process leads to a belief that you shouldn't deal with people who are more ignorant than you are—that if you don't have the absolute best students in front of you, you're wasting your time." This is perverse, Hackerman says. He thinks it's essential that faculty reach out to the other 99.9% of the students, who are, after all "the ones who support us." He hears "constant complaints" that faculty members regard education as a chore; "they're off in all directions seeking support and fame," ignoring the "reason for them being there."

Richard Atkinson, chancellor of the University of California (UC) at San Diego, shares Hackerman's concerns. "We have let the concern for undergraduate teaching drift," he says. In the days when he was an undergraduate, says Atkinson, "the superstars of the faculty taught the big undergraduate classes.... At the University of Chicago I took undergraduate chemistry from [Nobel laureate] Harold Urey."

But Atkinson warns that there is a faulty argument being advanced by research universities about their role as educators. "If the research universities want to argue that they are the ones to provide the best quality undergraduate education, then they are going to endanger their future existence," he says. The reason? "It says to all the other schools, 'If you're not doing research, you're not providing a quality education'... and that is a great mistake that we've perpetuated."

The underlying problem is that the system is overwhelmingly geared to reward research. "The best teacher in the world is known only to the perimeter of his campus," Hackerman says, "while a mediocre researcher is known around the world." He would like to see every major proposal for a center or large science project accompanied by a campus "educational impact statement" telling how it would benefit students.

Some universities have begun to take their teaching requirements more seriously. Last month, David Gardner, president of UC, announced that he was implementing several of the changes recommended by a university-wide task force chaired by UC Santa Cruz chancellor Karl Pister on faculty rewards. The report called for balancing "the contributions of teaching, research, and public service" in evaluating faculty, and rewarding faculty who act in a mentoring or advisory capacity to students. The university will also consider student evaluations of teachers when weighing faculty for promotions.

Atkinson says he is confident that universities around the country are beginning to pay more attention to their teaching responsibilities. But so far, that may not be the view from the faculty trenches. "They're just paying lip service to teaching," says a young faculty member from a research-intensive university. It may be a while before publish or perish passes from the scene.

E.M and J.P.
II. FACE TO FACE WITH THE TEXT

TASK A
Read the text and circle the statement that best summarises the main idea of the text.

1. Research and teaching have been considered two important factors in education.
2. Most university teachers devote their time to the development of new research projects.
3. The importance given to teaching has decreased as a result of the encouragement given to research.
4. Universities are demanding more requirements for promotion from their teachers.

TASK B
Based on the main ideas in the text, indicate if the following situations are True "T" or False "F".

   ___ 1. Quality research means good education.
   ___ 2. Nobel Prize professors should teach 99.9% of the students.
   ___ 3. Many university professors are looking for fame and prestige.
   ___ 4. Good researchers are always good teachers.
   ___ 5. Universities are starting to consider students’ evaluations when deciding on teachers’ promotions.

TASK C
The text mentions several people. Below you will find a series of statements attributed to some of them. Find who makes each statement.

1. "That’s all wrong."
   Norman Hackerman
2. "The best teacher in the world is known only to the perimeter of his campus."

3. "We have let the concern for undergraduate teaching drift."

4. "The current process leads to a belief that you shouldn’t deal with people who are more ignorant than you are—that if you don’t have the absolute best students in front of you, you are wasting your time."

5. "The superstars of the faculty taught the big undergraduate classes... At the University of Chicago I took undergraduate chemistry from [Nobel Laureate] Harold Urey."

6. "They are just paying lip service to teaching."

7. "If the research universities want to argue that they are the ones to provide the best quality undergraduate education, then they are going to endanger their future existence."

8. "the bonus was the science that was produced."
TASK D

Read the text and tick ✓ two statements that show the authors’ purposes in the reading.

*Are their purposes to*

___ 1. point out that teaching is taking second place to research?
___ 2. show that teaching is as important as research in education?
___ 3. give an overall idea about education at universities?
___ 4. denounce the deviation that teaching has suffered from its original purpose?
___ 5. show similarities between teaching and research?

TASK E

LANGUAGE AWARENESS

1. Look at the following examples taken from the text. Notice the verb form that comes after the underlined prepositions.

   – The reason for providing research funds to professors was to maintain . . . (lines 7-9).

   – The report called for balancing "the contribution of teaching, research, and public service" in evaluating faculty, and rewarding faculty who acted in a mentoring or advisory capacity to students. (lines 52-54).
What do all the verbs have in common?

2. Complete the following statements with the correct form of the verb.

a. Students should not leave university without (do)_____ any research.

b. USA universities are more concerned with winning prizes than with (teach)_____.

c. Important researchers used to (teach)_____ large classes at the university.

d. Are all teachers interested in (do)_____ research at universities?

e. American universities (sponsor)_____ investigations mainly to solve human problems.

f. Do you consider yourself good at (research)_____?

g. Nobel Prize winners (seek)_____ fame and support.
III. JUDGING AND PROPOSING SOLUTIONS

TASK A

Read the following case.

TEACHING OR RESEARCH?

You are a forty year old pediatrician from the National University. You hold an MSc. (Master of Science) in gastroenterology and work at the San Juan de Dios Hospital, where you are a respected teacher and researcher. At the moment, you are working on a project on dehydration in infants with cholera. The director of the hospital now wants you to devote most of your time to teaching and you are unwilling to do so because you want to further expand your investigation into the effects of dehydration in children with cholera.
Now, tick ✓ the statements that express the reasons the director gives you to concentrate your time just on teaching, and the reasons you give him to keep both jobs at the hospital.

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>DIRECTOR'S REASONS</th>
<th>YOUR REASONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Laboratory practice within pre and post-graduate courses should be related to research projects.</td>
<td></td>
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<tr>
<td>2. The hospital does not have enough resources to carry on with the research.</td>
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<tr>
<td>3. There is the opportunity to relate theory and practice.</td>
<td></td>
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<tr>
<td>4. Teachers have less academic prestige than scientists.</td>
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<tr>
<td>5. The study could contribute to a reduction in the incidence of cholera.</td>
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<tr>
<td>6. Research should be done based on teaching.</td>
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<td></td>
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<tr>
<td>7.</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
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</tbody>
</table>
Now count the director's reasons and your reasons. If you have more reasons to convince the director, you will keep both jobs. If not, you will dedicate more time to teaching. If, at the end, the director has more reasons and you still want to keep both jobs, write down some extra reasons to defend your case. Use the spaces given.

________________________________________________________________________

________________________________________________________________________

**TASK B**

Below are some of the steps you followed when you read the article "Teaching Vs. Research." Try to put them in the correct order.

_____ a. You were asked to do some exercises while reading the text: Task A, B and C in "Face to Face with the Text."

_____ b. Before reading the text you were asked to anticipate its meaning: Task A, B and C in "Reflecting upon the Title."

_____ c. After reading the text you found out about the authors' purpose Task D "Face to Face with the Text."

_____ d. Finally you were asked to solve a problem in "Judging and Proposing Solutions".

_____ e. Then you were asked to read the text.
SELF-EVALUATION FORM

- NAME OF THE ARTICLE: __________________________

- AUTHOR: ______________________________________

- SOURCE: ______________________ DATE: ________

- PURPOSE OF THE TEXT: _________________________

- KEY WORDS
  _____________________________________________
  _____________________________________________
  _____________________________________________

- TASKS I LIKED BEST
  _____________________________________________

- THINGS THAT I HAVE LEARNT:
  _____________________________________________
  _____________________________________________
  _____________________________________________

- OPINIONS ABOUT THE TEXT:
  _____________________________________________

- TOPICS I WANT TO GO INTO MORE DEEPLY:
  _____________________________________________
  _____________________________________________
  _____________________________________________

- EXTRA ARTICLES I HAVE READ:
  _____________________________________________
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<th>STRATEGIES APPLIED:</th>
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