The Mathematics of Love

Teacher's Key | Level B2 | EnglishBridges.com

Sections follow the student handout. Delete a section here when you delete it from the handout. The handout uses the short (quick) version of the reading.

Vocabulary: Fill in the Blank

1. estimate
2. narrowed down
3. stunt
4. hesitate
5. unremarkable
6. downplay / play down
7. commit
8. settle for
9. assumptions
10. tolerate
11. influence
12. repair
13. spiral
14. provokes

Word Partners

Part A. 1 d 2 c 3 h 4 e 5 a 6 b 7 f 8 g

Phrases: a rough estimate; a publicity stunt; hesitate to ask for help; downplay the risks; commit to a long relationship; settle for second best; a downward spiral; repair a damaged friendship.

Part B. 1 hesitation 2 tolerance 3 influential 4 assume 5 provocative 6 commitment

Comprehension Questions: Model Answers

1. *What did the economist do with his formula, and why does the writer call it a stunt?*
He used a formula that astronomers use to estimate alien civilizations to narrow thirty million women down to roughly 26 who matched his wishes. The writer calls it a stunt because love does not work like a spreadsheet.

2. *What did the dating site compare, and what did it find?*
It compared how men rated women's looks with how many messages the women received. Women with the most divided ratings, not the highest averages, received the most messages.

3. *What explanation did the site offer for its finding?*
People hesitate to approach someone they expect everyone else to want, but feel braver when they sense little competition. The reading calls this the site's own guess.

4. *Why should we be careful with this result?*
It comes from one site, one city, and a narrow age group; it shows a link, not a cause; and the explanation is only a guess.

5. *What does the 37 percent rule tell you to do, and how often does it find the very best person?*
Spend the first 37 percent of the search only looking, then choose the first person who is better than everyone before. Even so, it finds the very best person only about 37 percent of the time.

6. *What risks does the 37 percent rule have?*
The ideal partner might appear during the looking phase and be rejected, or you might settle for someone only slightly better after a run of disappointing people.

7. *What does the reading say about real life and the puzzle's assumptions?*
Real life breaks the puzzle's assumptions: you do not know how many people you will meet, you cannot rank people on a single scale, and you can sometimes return to someone. (The quick reading gives only the ranking example; accept any one.)

8. *What is the negativity threshold, and what did the model suggest about a low threshold?*
   It is how much irritation a person will tolerate before reacting. The model suggested that couples who last tend to have a low threshold: they notice problems, speak up, and repair them.
9. *Why do critics doubt the divorce predictions, and do you find their point convincing? Give a reason.*
   Open answer. Critics say predictions that work well on the couples used to build a model often work worse on new couples. Accept agreement (new data is the real test) or disagreement (the patterns can still be useful), with a reason.
10. *True, False, or Not Given: "The economist later found a partner." Explain your answer using the reading.*
    Not Given. The reading does not say whether the economist found a partner.
11. *Yes, No, or Not Given: "The writer believes that the dating site's explanation has been proved." Explain your answer using the reading.*
    No. The writer calls the explanation the company's own guess, so it has not been proved.
12. *Author's purpose: Why does the writer begin with the economist's formula? Is it (a) to introduce a playful example before the serious findings, (b) to prove that astronomers are good at dating, or (c) to explain how dating apps work?*
    (a) To introduce a playful example before the serious findings. The writer calls it a stunt, then asks what mathematics can tell us about romance.

True or False

1. **T.** The reading says he used a formula that astronomers use to estimate alien civilizations.
2. **F.** He found roughly 26 women.
3. **F.** Women with the most divided ratings received the most messages.
4. **T.** The reading says loved by some and disliked by others brought the most messages.
5. **T.** The reading calls it the company's own guess.
6. **F.** It comes from one site, one city, and a narrow age group.
7. **T.** During this time you reject everyone as a serious candidate.
8. **F.** It works only about 37 percent of the time.
9. **T.** He recorded hundreds of couples discussing disagreements.
10. **F.** The reading says recent estimates are closer to four in ten.

Language Focus: Approximating Numbers and Amounts

Model answers. Accept any answer that uses the form correctly and makes sense.

1. I sleep about seven hours a night.
2. It takes me roughly thirty minutes to get to class or work.
3. I have nearly two hundred photos of my friends on my phone.
4. My phone has more than fifty apps.
5. The place where I live has about two million people.
6. I spend about four hours a day on my phone.
7. It is roughly a ten-minute walk from my home to the nearest bus stop.
8. I send nearly fifty messages on a normal day.
9. A cup of coffee costs about four dollars where I live.
10. There are more than thirty people in my class.

Accept any sensible approximation word (about, around, roughly, nearly, more than, over, approximately) that fits the number.

Notes on the Evidence

Economist: the estimate comes from a 2010 University of Warwick thesis by Peter Backus, reported by The Boar and the

Korea Times (January and February 2010). Both give about 30 million women narrowed to 26. Reports differ on the filters (one says London and ages 24 to 34) and on the odds per night out: one gives 0.0000034 percent and equates it with 1 in 285,000, which does not match. The reading gives only the 30 million and 26 figures, does not name him, and does not name a country. The description of the Drake equation (a 1961 formula for the number of communicative civilizations in the Milky Way, whose results range from far fewer than one to millions) is from Wikipedia. The original thesis was not opened.

Dating site: the analysis was published on OkCupid's own blog (2010) and was read through a Gizmodo republication. Regression on about 43,000 straight women aged 20 to 27 in one city; R-squared 0.28; correlational. Ratings spread (standard deviation) was linked to more messages; "messages received" is a proxy for attention. The game-theory explanation is the authors' own guess. The advice about photos is an extrapolation and is hedged ("may backfire"). The original blog post was not opened.

Optimal stopping: the 37 percent rule and its success rate of about 1/e come from the Wikipedia article on the secretary problem, which also lists the assumptions (known number of candidates, no recall, ranking only) and reports experiments in which people stop searching too soon. The "seven or eight years" example is arithmetic (37 percent of 20 years is 7.4). A popular claim that some fish follow this rule, and a claim that people do it unconsciously around their mid to late 20s, were not verified and are left out.

Gottman and Murray: Gottman's own FAQ gives 93.6 percent accuracy for a 1992 study; a 2004 Times Higher Education report gives 94 percent and notes skeptical psychologists. The reading says "more than 90 percent" and attributes it as a claim. The critique about new samples comes from a general 2001 paper on predicting divorce without cross-validation (Heyman and Smith Slep; 29 percent accuracy on held-out data) and a 2007 test of Gottman-type models on 85 couples where several mechanisms did not predict outcomes (Kim, Capaldi, and Crosby); both were read through a ScienceBlog summary, and the 2001 paper does not name Gottman. The "low negativity threshold" finding is reported in popular accounts of the model; the Times Higher Education report says partners who speak up and repair conflict fare better than those who stay silent. The reading hedges it ("the model suggested"). The Psychology Today article does not mention Murray.

Divorce: the "half of marriages" figure comes from comparing annual marriage and divorce rates (Live Science, 2013, citing CDC data for 2009). A 2024 analysis by the Institute for Family Studies puts the projected figure for today's first marriages at about 40 percent; this was read through a law-firm news page (April 2026), and the original was not opened. The reading says "closer to four in ten" for recent US estimates and notes that the figure depends on who is counted. All figures are as of October 2026.