【7】①－1

The source of **every new idea** is the same. There is a network of neurons in the brain, and then the network shifts. All of a sudden, electricity flows in an unfamiliar pattern, a shiver of current across a circuit board of cells. **But** sometimes **a single network isn’t enough**. Sometimes a creative problem is so difficult that it requires people to **connect their imaginations together;** the answer arrives **only if we collaborate**.

【7】①－2

①That's because **a group** is not just a collection of individual talents. Instead, it is a chance for those talents to exceed themselves, to produce something greater than anyone thought possible. When the right mixture of people come together and when they collaborate in the right way, what happens can often feel like magic. **But** it's not magic. There is **a reason** why **some groups are more than the sum of their parts**.

【7】②

Furthermore, there’s evidence that group **creativity** is becoming more necessary. Because we live in **a world of very hard problems** — all the low-hanging fruit is gone — many of t**he most important challenges exceed the capabilities of the individual imagination**. **As a result**, we can find solutions only by **working with other people**.

【7】③－1

Ben Jones, a professor of management at the Kellogg Business School, has demonstrated this by analyzing trends in “scientific production.” The most profound trend he’s observed is **a sharp shift toward scientific teamwork**. By analyzing 19.9 million peer-reviewed papers and 2.1 million patents from the last fifty years, Jones was able to show that more than 99 percent of scientific subfields have experienced **increased levels of teamwork**, with the size of the average team increasing by about 20 percent per decade

【7】③－2

While the most cited studies in a field used to be the product of lone geniuses — think Einstein or Darwin — Jones has demonstrated that **the best research now emerges from groups**. It doesn't matter if the researchers are studying particle physics or human genetics**:** science papers produced by **multiple authors** are cited more than twice as often as those authored by individuals. ②**This trend** was even more apparent when it came to "homerun papers" **— those publications with at least a thousand citations** — which **were** more than *six times* as **likely to** come from a team of scientists.

【7】④

The reason is simple: the biggest problems we need to solve now require the expertise of people from different backgrounds who bridge the gaps between disciplines. Unless we learn to share our ideas with others, we will be stuck with a world of seemingly impossible problems. We can either all work together or fail alone.

【7】⑤－1

But how should we work together? What's the ideal strategy for group creativity? Brian Uzzi, a sociologist at Northwestern, has spent his career trying to answer these crucial questions, and ③he's done it by studying Broadway musicals. Although Uzzi grew up in New York City and attended plenty of productions as a kid, he doesn't exactly watch *A Chorus Line* in his spare time. "I like musicals just fine, but that's not why I study them," he says.

【7】⑤－2

Instead, Uzzi spent five years analyzing thousands of old musicals because he sees the art form as a model of group creativity. “**Nobody** creates a Broadway musical **by themselves**,” Uzzi says. “The production requires too many different kinds of talent.” He then rattles off a list of the diverse artists that need to work together: the composer has to write songs with a lyricist and librettist, and the choreographer has to work alongside the director, who is probably getting notes from the producers.

【7】⑥

Uzzi wanted to understand **how the relationships** of these team members **affected the end result**. **Was it better** to have a group composed of **close friends** who had worked together before, or did **total strangers make better** theater**? What is the ideal form of creative collaboration?** To answer these questions, Uzzi undertook an epic study of nearly every musical produced on Broadway between 1877 and 1990, analyzing the teams behind 2,258 different productions. (To get a full list of collaborators, he often had to track down dusty old *Playbills* in theater basements.) He charted the topsy-turvy relationships of thousands of different artists, from Cole Porter to Andrew Lloyd Webber.

【7】 ⑦

The first thing Uzzi discovered was that the people who worked on Broadway were part of an extremely interconnected social network**: it didn't take many links** to get from the librettist of *Guys and Dolls* to the choreographer of *Cats*. Uzzi then came up with a way to measure the density of these connections for each musical, ④a designation he called *Q*. In essence, the amount of *Q* reflects the "social intimacy" of people working on the play, with higher levels of *Q* signaling a greater degree of closeness. For instance, if a musical was being developed by a team of artists who had worked together several times before — this is common practice on Broadway, since producers see "incumbent teams" as less risky — that musical would have an extremely high *Q*. In contrast, a musical created by a team of strangers would have a low *Q*.

【7】⑧－1

This metric allowed Uzzi to explore the correlation between levels of *Q* and the success of the musical. “Frankly, I was surprised by how big the effect was,” Uzzi says. “I expected *Q* to matter, but I had no idea it would matter this much.” According to the data, the relationship between collaborators was one of the most important variables on Broadway. The numbers tell the story: When the ***Q* was low, or less than 1.7**, the musicals were much more likely to **fail**. Because the artists didn’t know one another, they struggled to work together and exchange ideas. “**This wasn’t so surprising**,” Uzzi says. “After all, you can’t just put a group of people who have never met before in a room and expect them to make something great. It takes time to develop a successful collaboration.

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⑤However, when the *Q* was too high (above 3.2) the work also suffered. The artists were so close that they all thought in similar ways, which crushed theatrical innovation. According to Uzzi, this is what happened on Broadway during the 1920s. Although the decade produced many talented artists — Cole Porter, Richard Rodgers, Lorenz Hart, and Oscar Hammerstein II — it was also full of theatrical failures. (Uzzi's data revealed that 87 percent of musicals produced during the decade were utter flops, which is far above the historical norm.) The problem, he says, is that all of these high-profile artists fell into the habit of collaborating with only their friends. "Broadway [during the 1920s] had some of the biggest names ever," says Uzzi. "But the shows were too full of repeat relationships, and that stifled creativity. All the great talent ended up producing a bunch of mediocre musicals."

【7】⑨

⑥What kind of team, then, led to the most successful musicals? Uzzi's data clearly demonstrates that the best Broadway shows were produced with ***intermediate* levels** of social intimacy. A musical produced at **the ideal level of *Q* (2.6) was** two and a half times **more likely to** be a commercial success than a musical produced with a low *Q* (＜1.4) or a high *Q* (＞3.2). It was also three times more likely to be lauded by the critics. This led Uzzi to argue that creative collaborations have a sweet spot: "The best Broadway teams, by far, were those with a mix of relationships," Uzzi says. "These teams had some old friends, but they also had newbies. This mixture meant that the artists could interact efficiently — they had a familiar structure to fall back on — but they also managed to incorporate some new ideas. They were comfortable with each other, but they weren't *too* comfortable."

【7】⑩－1

Uzzi's favorite **example** of intermediate *Q* is *West Side Story*, one of the most successful Broadway musicals of all time. ⑦In 1957, the play was seen as a radical departure from Broadway conventions, for both its willingness to tackle social problems and its extended dance scenes. At first, *West Side Story* might look like a play with a high *Q*, since several of its collaborators were already Broadway legends who had worked together before. The concept for the play emerged from a conversation among Jerome Robbins, Leonard Bernstein, and Arthur Laurents. But that conversation among old friends was only the beginning. As Uzzi points out, *West Side Story* also **benefited from a crucial injection of unknown talent**.

【7】⑩－2

As Uzzi points out, *West Side Story* also benefited from a crucial injection of unknown talent. A twenty-five-year-old lyricist named Stephen Sondheim was hired to write the words (even though he'd never worked on Broadway before), while Peter Gennaro, an assistant to Robbins, provided many important ideas for the choreography. "People have a tendency to want to **only work with their friends**," says Uzzi. "It feels so much more **comfortable**. **But** that's exactly **the wrong thing to do**. If you really want to make something great, then you're going to **need to seek out some new people too**."