

SPORTS, EXACTLY



by Carl Brown

Who can sprint 100 meters in the shortest time? There is less than a second between the world's best times.

Who can throw the farthest? The difference between two excellent shot-put throws can be less than one inch.

Here's another question. How do people measure such exact amounts?

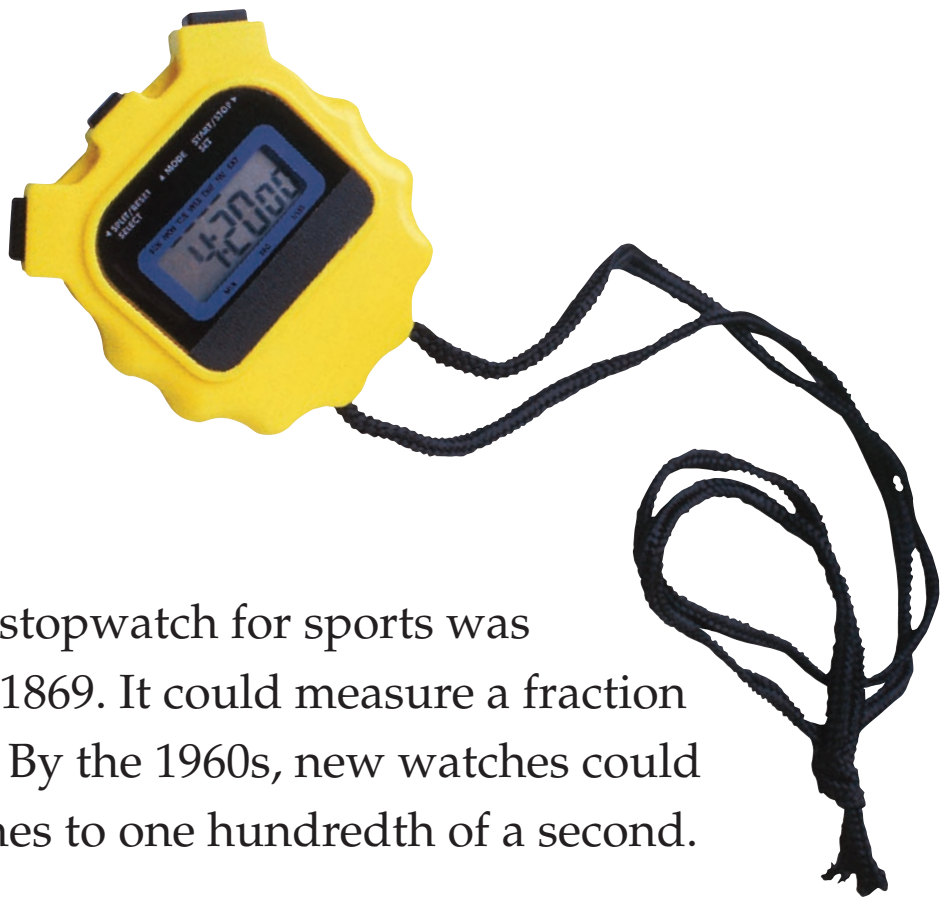


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READ & RESPOND

Make Inferences

When sprinters race, does one person usually win by many seconds? Explain.



TIME

The first stopwatch for sports was invented in 1869. It could measure a fraction of a second. By the 1960s, new watches could measure times to one hundredth of a second.

Today, computers measure sports times to one thousandth of a second. That's how we can be sure who is the world's fastest sprinter!

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Central Idea

Why is it important in sports to measure to a fraction of a second?

PHOTOS

It can be very hard to see who wins a close race. That's why people began to use cameras. A photo can show who crossed the finish line first.

It once took a few minutes to develop the film. People needed to improve the cameras. Now, digital photos are used. The cameras take 3,000 photos a second.



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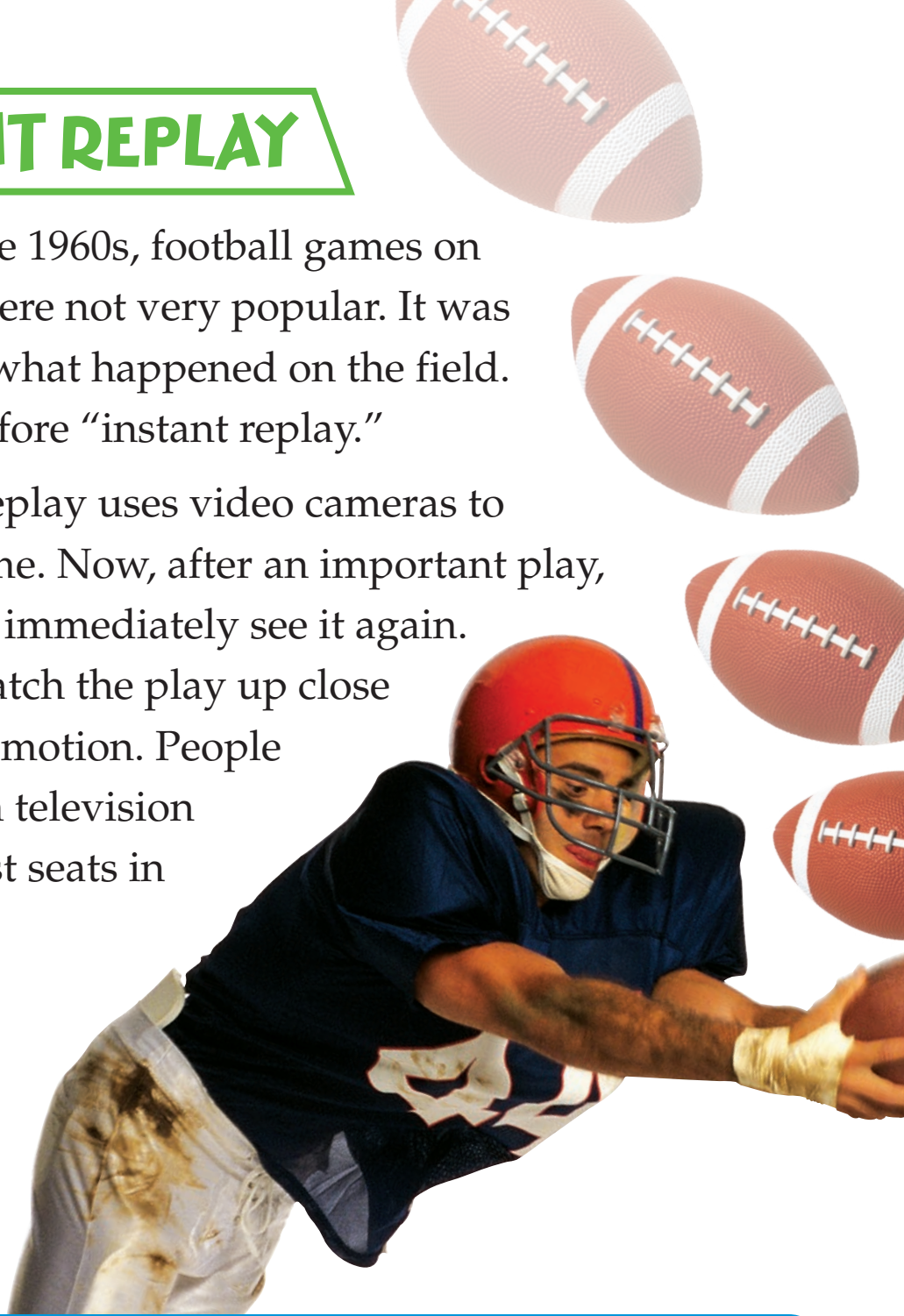
Make Inferences

Why might it be hard to see who wins a close race?

INSTANT REPLAY

Before the 1960s, football games on television were not very popular. It was hard to see what happened on the field. That was before “instant replay.”

Instant replay uses video cameras to record a game. Now, after an important play, viewers can immediately see it again. They can watch the play up close and in slow motion. People watching on television have the best seats in the house!



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Central Idea

How did instant replay change the way people watched football games?



BASEBALL AND TENNIS

Instant replay is also used to help the referee or umpire make good decisions. It can show if a baseball hit is a home run or a foul.

In tennis, the player has to hit the ball so that it lands inside the lines. The ball can go so fast that the athletes may not agree. Several cameras linked with a computer can show exactly where a ball hits the ground.

READ & RESPOND

Make Inferences

Why might a tennis player disagree with a referee?



RACES

Foot races use instant replay, too. If a runner leaves the blocks less than eleven hundredths of a second after the starting gun, it's a false start. The runner must have decided to go before hearing the gun. Nobody can respond that fast!

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READ & RESPOND

Make Inferences

What would happen if a runner left the blocks before the starting gun was fired?



SOCCER



You have read how computers and cameras help people make decisions about sports. But sometimes referees don't want to compete with machines.

Soccer games on television use instant replay. But the people who make the rules for soccer decided not to use instant replay on the field. They agree that the camera may show that a referee was right or wrong. However, they insist that a person, not a machine, should make the call.

READ & RESPOND

Central Idea

Write one way that computers and cameras help people make decisions during sporting events.

Reread and Respond



1 Which happened first: people using a stopwatch to time sports, or people using instant replay?

Hint
For clues, see pages 219 and 221.

2 Why don't soccer referees use instant replay?

Hint
For a clue, see page 224.

3 Why are digital cameras more useful than film cameras in sports?

Hint
For a clue, see page 220.