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Spectacular Sports

Motocross

Rational Numbers



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Getting Ready to Race

Meet Bert Jovin, an **amateur** motocross rider. Motocross is a high-intensity **dirt bike** race that takes place outdoors. Riders not only have to race through the course, but they also have to avoid and overcome obstacles, such as thick trees, tough **terrain**, tight turns, and oftentimes, mud…lots of mud.

Jovin takes his time preparing for each race. He needs to know what he will be facing each weekend, so he can modify his training **regimen**. If Jovin knows the racetrack will have a lot of trees, he may practice riding in forests. Other races are on beaches, so Jovin will change his tires to better grip the sand.

Whatever the terrain may be, Jovin has to be prepared. He gets ready as early as he can for a race. Sometimes, he has months to prepare, while other times, a last-minute weather change can force him to adjust his training. Usually though, Jovin has about a week in between races. That gives him about five days to do all of his necessary preparations. Let's follow Jovin during a typical week as he prepares for a race.





Jovin puts his gear on.

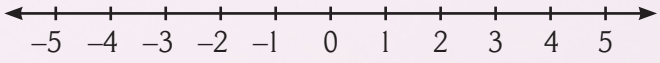
For Preview Only



LET'S EXPLORE MATH

One morning, Jovin trains for three and one-quarter hours for an upcoming beach race.

1. Write his training time as a decimal. Then, write it as two different fractions.
2. Plot Jovin's training time on a number line like this one. What strategies can you use to make sure you are accurate?



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Motocross races are outdoor contests where riders race on dirt bikes. Each race lasts just over 30 minutes, and there are two races for each **class**. Another dirt bike sport, called supercross, is similar to motocross, but it takes place in a stadium. And a third related sport is arenacross, which, as the name suggests, takes place in an arena. Motocross, however, is something unique. It combines the **technicality** of an indoor race with the elements of nature.

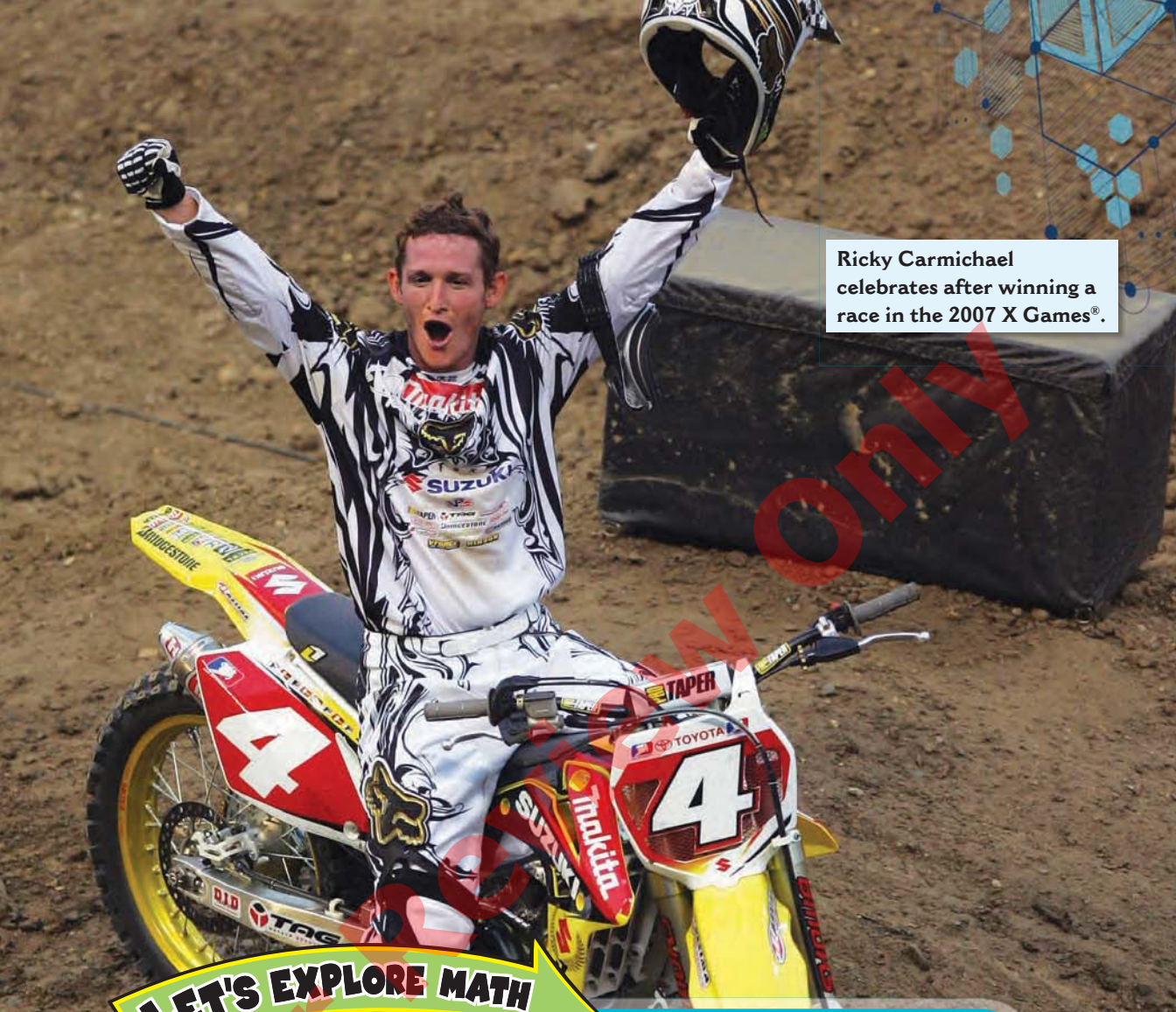
Motocross racers ride in whatever conditions they are given. They race in blazing heat and in pouring rain. They race in dusty deserts and through muddy swamps. Oftentimes, it is the state of the track, and not the track itself, that is the biggest challenge for riders.

That is what happened at the 2006 professional motocross race in Millville, Minnesota. A huge storm hit between the first and second races, turning the track into a swamp. Rider Ricky Carmichael jumped into first place. As mud started ruining dirt bikes all along the track, Carmichael's bike kept going. By the end of the race, he had passed every other racer a second time. No one had ever done that before. And most likely, no one will ever do that again.



Jovin crosses the finish line in an arenacross race.

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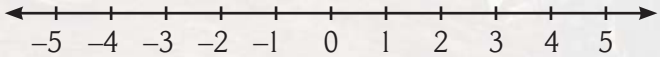


Ricky Carmichael celebrates after winning a race in the 2007 X Games®.

LET'S EXPLORE MATH

Imagine that a motocross racer is making great time early in a race. She averages $2\frac{1}{2}$ minutes per lap. Then, a light rain begins. Her average time increases to 3 minutes per lap late in the race.

1. Plot the racer's early and late race averages on a number line like this one.



2. Which time is farther from 0 on the number line?
3. How can you tell which time is an integer?

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Prepping His Bike

Luckily, Jovin has never had to race on a track like the one at Millville; however, he does encounter mud on most racetracks. Preparation for these races is key. Before race day, Jovin studies the weather, his opponents, the track layout, and whatever else he thinks might help him. He changes the setup of his bike depending on which track he will be racing.

Jovin's tires are perhaps the most important **facet** of his dirt bike. Jovin lives in Oregon, where it rains for about half of the year. That means many of the racetracks on which he competes will have mud. For muddy races, Jovin puts tires with a wide **tread** on his bike, so mud doesn't get packed in them. If this happens, the tires will not have good **traction**, which can be very dangerous.

Jovin also protects the engine of his dirt bike. If mud gets around his engine, it could get too hot, and the dirt bike could **seize** up and stop running. Jovin fixes that problem with foam. Foam is light and does not add weight to his bike, but it is absorbent enough to soak up mud before it hits the engine.



Jovin's dirt bike may get muddy, but his preparation will keep it running.

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Foam around the air filter stops dirt from mixing with the fuel.

Let's Explore Math

Racers have an interesting use for cooking spray. They spray it all over their bikes, but especially under the fenders. This prevents mud from sticking. Built-up mud makes bikes heavier and more dangerous over jumps. The spray not only keeps bikes cleaner, but it keeps them safer too.

Imagine that racers spray their bikes with cooking spray to get ready for a race. Kristina uses 28.349 grams, Rosa uses 28.094 grams, and Scott uses 28.4 grams. Which racers use the greatest and least amounts of cooking spray? Use words, numbers, or pictures to explain your thinking.



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