Math Used In Ice Hockey

The talent of stick handling, shooting, passing, and goaltending entail the use of math. Angle usage and geometry are integral parts of mastering the game.

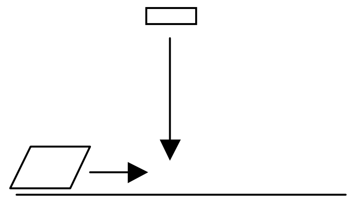
The hockey puck is three-inch long rubber disc that is used in ice hockey. With exact calculations of the length of the puck and a thorough study of angles and geometry, help players pass the puck with sticks successfully.

The following examples prove the importance of math in ice hockey:

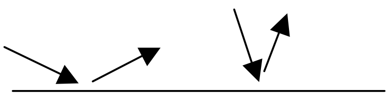
1. While playing ice hockey, attacks can occur at any time. Team members need to calculate the speed of the attacker, the angle of attack, and their own speed to evaluate the angle through which they can stop the attacker.

2. Math helps find the largest fraction, and according to the calculation, 4/3 is a larger fraction compared to 5/4. This gives four skaters more advantage over three rather than five skaters over four.

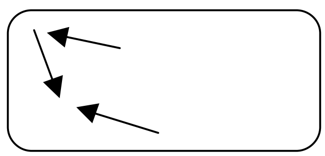
3. While planning for a face-off, the referee drops the hockey puck, and the centers reach for the puck at exact time using the knowledge of math. The centers have to determine how fast to go for the puck. They have to estimate the time it will take the puck to hit the ice, how long it takes the puck to reach the ice and where the puck will land on the ice. This helps them calculate the speed required, when to start moving their sticks, how fast to move their sticks and the time to start moving. Thanks to your math skills, you can win another face-off!



4. In ice hockey, the sixth and seventh teammates are the boards. To know the exact spot on the board to strike the puck, the player needs to use math calculations. A theory in math states that angle of incidence is equal to the angle of reflection. This theory helps a lot in striking the puck to the board. And is why your give-and-go with these "teammates" always works so well.

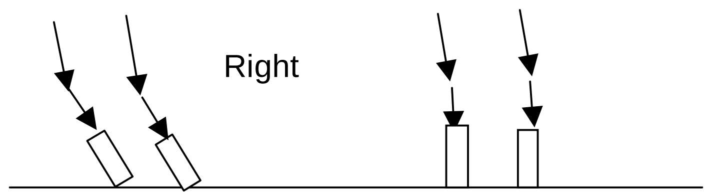


5. Your teammate is chasing the puck into their corner of the attacking zone. You're just entering the left side of the zone at full speed. When your teammate gets the puck, they have to evaluate your speed and adjust both the speed and direction of her pass to put the puck on your stick when you're in shooting position. You have to read what he's doing, factor in his passing ability, and adjust your speed to make sure you're there when the puck arrives.

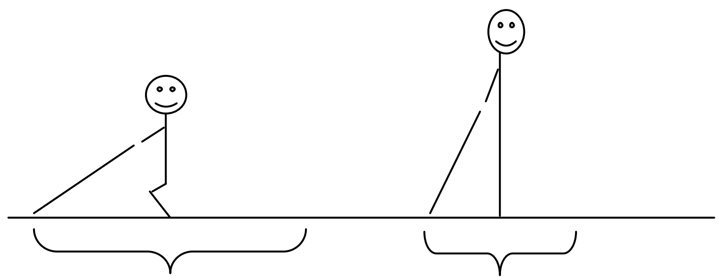


6. Another application of math is used with skating. To get more edge control, the skaters needs to roll their ankles. This relates to the angle rule in Math. To get longer strides, the skaters keep their hips low as per the specification of triangle rule in math.

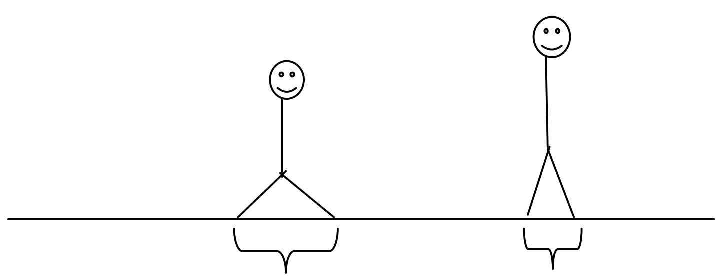
a. The skater who rolls their ankles has more edge control because of the ANGLE of their blades against the ice.



b. The skater who keeps their knees bent controls more ice with their stick because they understands triangles.

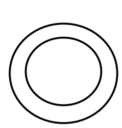


c. The skater who keeps their hips low* gets longer strides - more triangles!



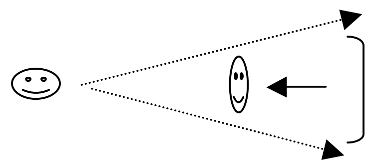
*We say it that way because some benefits of staying low are not obtained by bending at the waist.

7. Cross-unders help players skate faster while turning because, during a turn without cross-unders, the interior skate has less skating to do than the exterior skate. If the interior skate is fully extended in the usual way, it works against the turn. (It's like trying to turn a canoe with paddles working at full force on both sides.) Instead of taking short strides with the interior skate, we convert the interior skate into a second exterior skate, crossing under and making full strides on it’s outside edge. What keeps them from falling into the circle when you use both skates externally is related to physics.



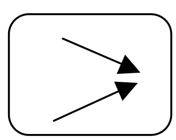
C = ΠD. If you skate around a face-off circle without cross-unders, your outside skate travels about 13 feet further than your inside skate.
That's not efficient.

8. Goaltending and shooting involve lots of math. When the goalie faces an attacker on a breakaway, the goalie needs to come out just enough to “cut off the angles”. This requires a lot of fast math. The entire process requires a three-dimensional application of math and the shooting process also accompanies the math application.



(That goalie had 18 saves on 20 shots in his last game, giving him a save percentage of 90%).

9. A layer is playing defense and an opponent with the puck breaks past their partner across the ice. Does he skate right to where he sees the attacker? No, because he won't be there when the other player arrives. He as to assess his teammate’s speed, his speed, and his angle of attack, then calculate an angle on which he can intercept him. Angling is a key ingredient of hockey defense. It's amazing how well it is done, considering that none of us can easily explain the underlying math.



Which fraction is largest: 5/4, 4/3, 3/2 or 2/1?
If your team has a 5 on 4 advantage, and you have to decide whether to draw an opponent away from the play, it's important to know that 4/3 is a larger fraction (i.e., the numerator is larger in relation to the denominator) than 5/4. Math tells us that 4 skaters have a better advantage over 3 than 5 skaters have over 4.

Math teaches us about length (one dimension), area (two dimensions), and volume (three dimensions). Consider the dimensions of hockey. When a brand new hockey player gets the puck on his stick, all he can think about is carrying it toward the other team's goal, and all the other team has to do is stand in his way. He's thinking about the length of the rink, but not the width (its second dimension). After a month of playing, he will be looking for cross-ice passing opportunities. Does the rink have a third dimension? Yes, if you loft the puck over an opponent's head.

The above examples illustrate why it is important for hockey players to practice their math lessons to apply in their day-today life, to win every point of life.