



STRIKES ARE FOR SHOW....

...SPARES ARE FOR DOUGH!

THE SCIENCE BEHIND STRIKES AND SPARES
JOHN LOSITO - PRESENTING

AGENDA

- A LITTLE HISTORY ABOUT ME
- THE EQUIPMENT
- THE PERFECT STRIKE
- ADJUSTING 101
 - THE LANE
 - THE CONDITION
- 1023 OUTCOMES
- YOU'RE TURN

ABOUT THE PRESENTER...

- LEAD INSTRUCTOR FOR THE DICK RITGER BOWLING ACADEMY
- HEAD COACH OF THE PHILIPPINE NATIONAL TEAM
- PBA MEMBER FOR MORE THAN 25 YEARS
- TWO TIME NATIONAL COLLEGIATE CHAMPION
- NEBRASKA HIGH SCHOOL BOWLING FEDERATION COMMISSIONER SINCE THE INCEPTION (2002)
- PROPRIETOR, SUN VALLEY LANES

THE EQUIPMENT



- THE UNITED STATES BOWLING CONGRESS (USBC) SETS ALL THE PLAYING RULES AND EQUIPMENT SPECIFICATIONS FOR “CERTIFIED” BOWLING.
- ALL LANES, PINS, BALLS AND CONDITIONING EQUIPMENT MUST PASS USBC TESTING FOR MANUFACTURERS, THEN THIS EQUIPMENT MUST BE INSPECTED WITHIN IN THE CENTER.
- THE USBC HAS GOVERNED BOWLING FOR MORE THAN 100 YEARS.

THE PINS

- EACH PIN IS 15" TALL AND SPACED 12" FROM CENTER TO CENTER OF THE NEAREST PIN, IN AN EQUILATERAL TRIANGLE.
- EACH PIN WEIGHS BETWEEN 3 LBS. 6 OZ. AND 3 LBS. 10 OZ.
- EACH PIN HAS TWO "VOIDS" INSIDE OF THEM TO CONTROL WEIGHT DISTRIBUTION AND CENTER OF GRAVITY.
- EACH PIN FALLS WHEN TILTED MORE THAN 9 DEGREE OFF CENTER.





THE BALLS

- EACH BALL HAS A MAXIMUM RADIUS OF 27" AND A MAXIMUM DIAMETER OF 8.595".
- A BALL MAY NOT WEIGH MORE THAN 16 .LBS, BUT THERE IS NO MINIMUM WEIGHT.
- A BALL MUST HAVE A MINIMUM 72 HARDNESS AT ROOM TEMPERATURE.
- A BOWLING BALL MAY HAVE A COEFFICIENT OF FRICTION OF NO MORE THAN .32 RATING
- A BOWLING BALL MUST MEET MULTIPLE OTHER REQUIREMENTS, INCLUDING SIDE, TOP, THUMB WEIGHTS, RADIUS OF GYRATION AND GRIPPING/VENT HOLE AMOUNTS/SIZES.

THE USBC CERTIFIED LANE

- EVERY BOWLING LANE IS 62' 10 3/16" FROM FOUL LINE THROUGH THE PINDECK.
- EVERY BOWLING LANE IS 60' FROM THE FOUL LINE TO THE CENTER OF THE HEAD PIN.
- EVERY LANE IS 41 1/2" WIDE, +/- 1/2".
- CONDITIONER IS APPLIED TO THE LANE ACCORDING TO CURRENT USBC SPECIFICATIONS, WITH A MINIMUM OF 3 UNITS OF CONDITIONER WHERE CONDITIONER IS APPLIED. *FOR COMPARISON, A PIECE OF PAPER IS ABOUT 9 UNITS THICK.*

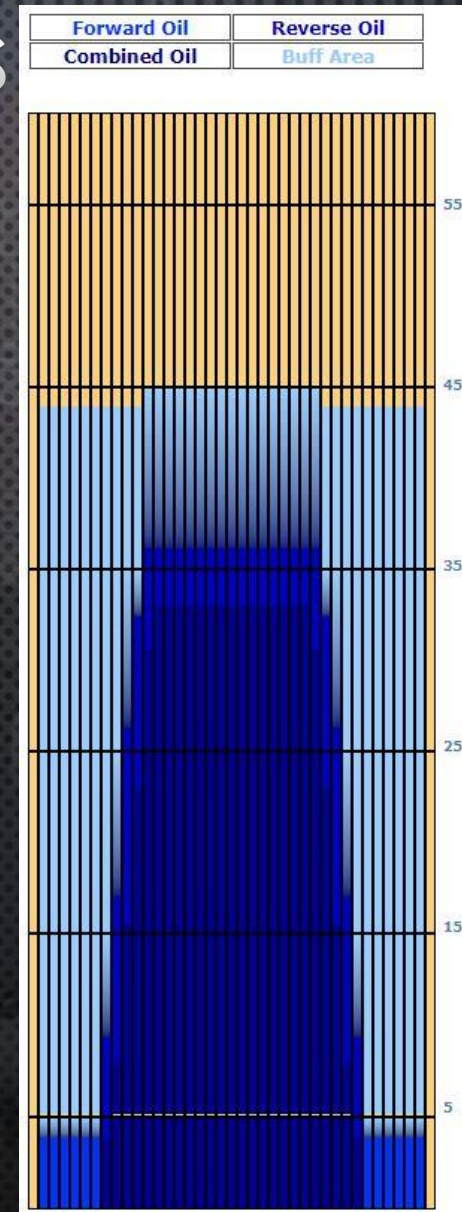




USBC CERTIFIED LANE CONDITIONS

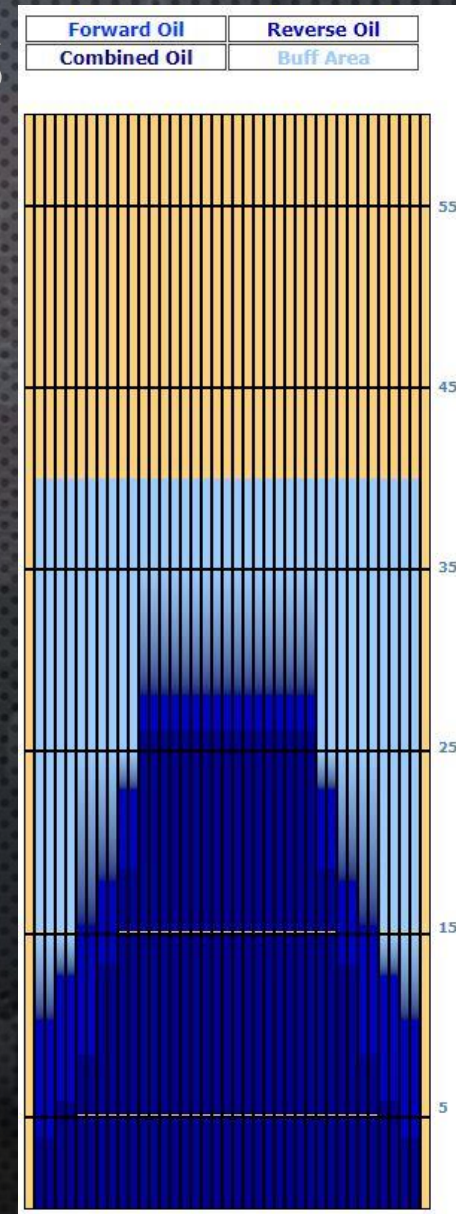
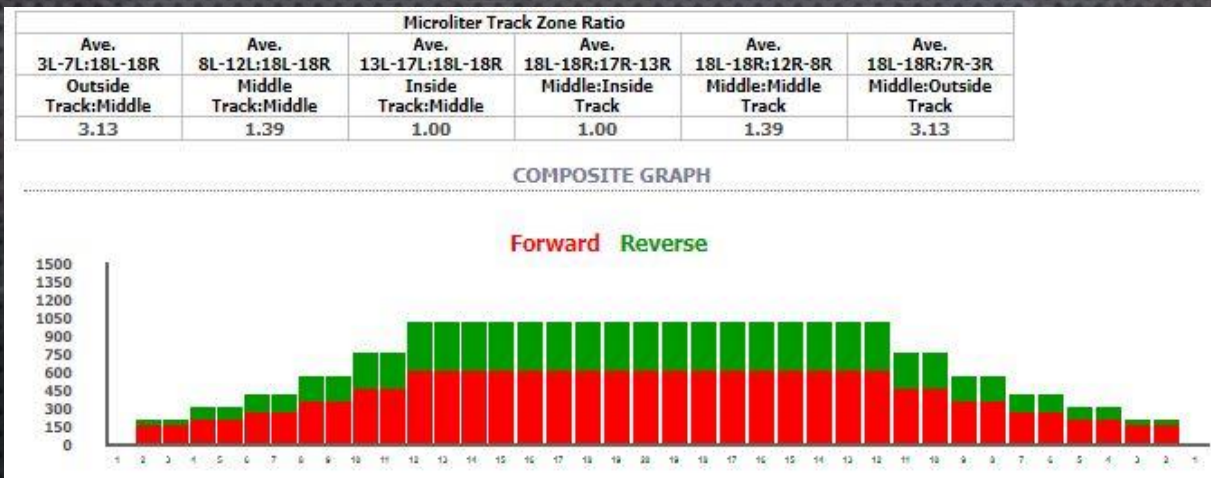
- A “LANE CONDITION” REFERS TO THE PATTERN OF CONDITIONER (A.K.A. “OIL”) PLACED ON THE LANE.
- A ‘NORMAL’ LANE PATTERN HAS APPROXIMATELY 25 ML OF CONDITIONER, OR 5 TEASPOONS, PER LANE.
- LANE CONDITIONS ARE GENERALLY CLASSIFIED AS “RECREATIONAL”, “CHALLENGE” AND “SPORT”.
- THESE DIFFERENT TYPES OF PATTERN CHANGES THE DIFFICULTY FOR THE PLAYER IN “HITTING THE POCKET”.

USBC CERTIFIED LANE CONDITIONS RECREATION PATTERN



- SCORES WILL BE HIGH, WITH A PREMIUM ON STRINGING STRIKES.
- FAVORS THE INTERMEDIATE SKILLED PLAYER.

USBC CERTIFIED LANE CONDITIONS CHALLENGE PATTERN



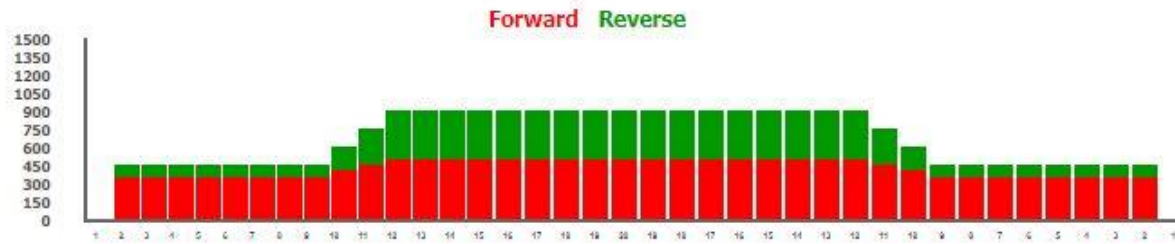
- SCORES WILL BE LOWER, WITH A PREMIUM ON CONSISTENT PLAYER DELIVERY.
- FAVORS THE HIGH SKILLED PLAYER.

USBC CERTIFIED LANE CONDITIONS

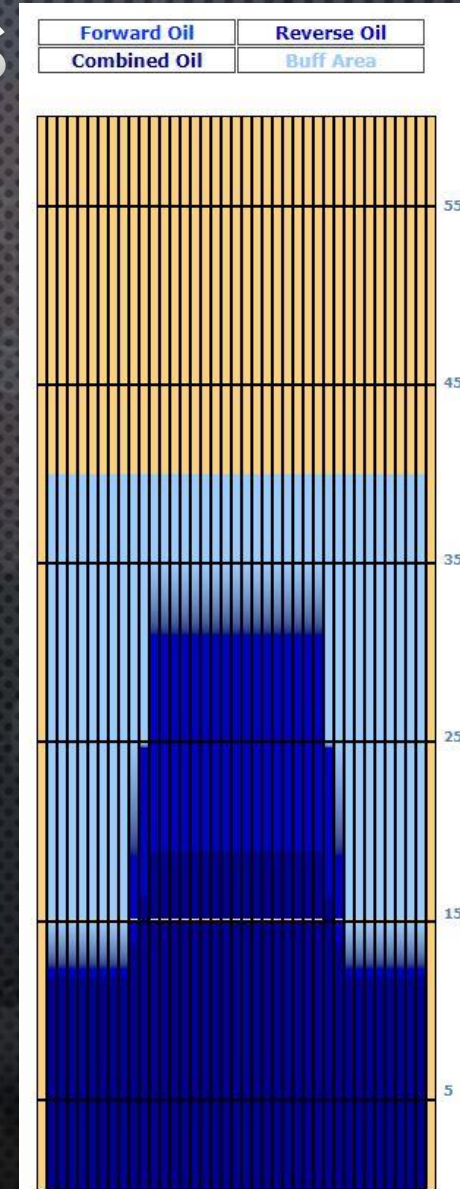
SPORT PATTERN

Microliter Track Zone Ratio					
Ave. 3L-7L:18L-18R	Ave. 8L-12L:18L-18R	Ave. 13L-17L:18L-18R	Ave. 18L-18R:17R-13R	Ave. 18L-18R:12R-8R	Ave. 18L-18R:7R-3R
Outside Track:Middle	Middle Track:Middle	Inside Track:Middle	Middle:Inside Track	Middle:Middle Track	Middle:Outside Track
2.00	1.43	1.00	1.00	1.43	2.00

COMPOSITE GRAPH



- SCORES WILL BE VERY LOW, WITH A PREMIUM ON SPARE MAKING AND CONSISTENT DELIVERY.
- FAVORS THE LOW SKILLED PLAYER.



USBC CERTIFIED LANE CONDITIONS

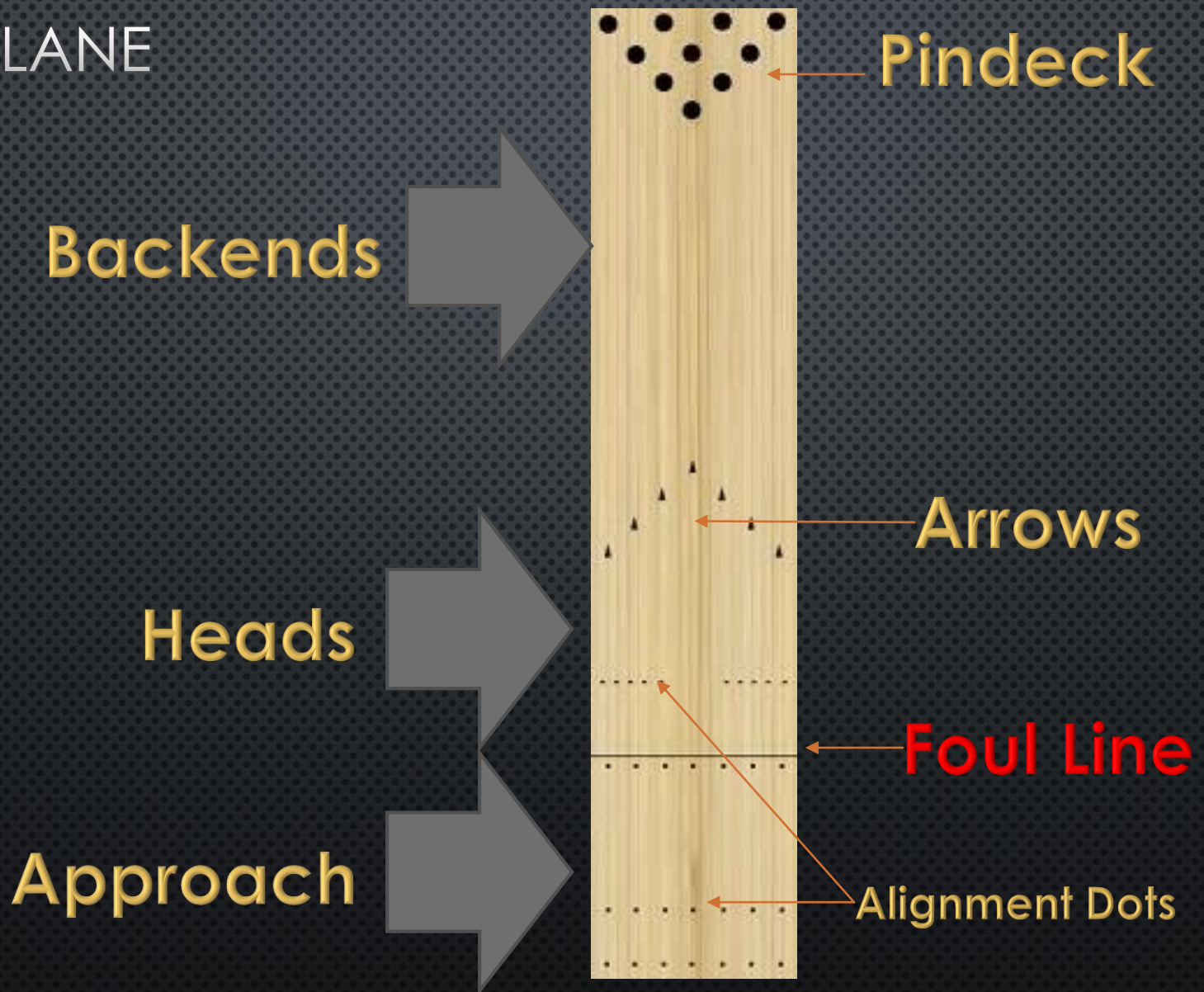
- TODAY, STATE OF THE ART LANE MACHINES CAN DUPLICATE LANE CONDITIONS FROM LANE TO LANE TO THE SAME MICROLITER.
- HOWEVER, EVEN WITH THIS TECHNOLOGY, LANES WILL NOT PLAY THE SAME, DUE TO DIFFERENCES IN TOPOGRAPHY AND FRICTION.

EVERYTHING ELSE



- OTHER SPECIFICATIONS EXIST FOR THE COMPLETE PLAYING AREA AND CAN BE FOUND AT BOWL.COM
- LET'S GO BACK TO THE LANE TO GET STARTED...AND LEARN SOME BASICS ABOUT THE LANE....

THE LANE



THE LANE AND PROPER TERMINOLOGY

Left handed
players

Count from the left side of the lane.

Right handed
players

Count from the right side of the lane.

Inward

Move to a higher numbered board.

Outward

Move to a lower numbered board.

Arrows

On boards 5, 10, 15, 20, 25, 30 and 35

THE STRIKE

- THE GOAL OF EVERY FIRST DELIVERY IS TO STRIKE.
- DOES ANYONE KNOW HOW MANY PINS ARE HIT ON THE “PERFECT STRIKE”?

THE STRIKE

FOR A PERFECT STRIKE, THE
BALL SHOULD MAKE CONTACT WITH
FOUR (4) PINS.

THEY ARE THE 1, 3, 5 & 9 PIN.
(THIS IS IF YOU ARE RIGHT HANDED)
FOR LEFTIES IT'S THE 1, 2, 5 & 8 PIN

BUT WHAT IF I DON'T STRIKE???

- WHEN A PLAYER DOES NOT STRIKE, FEEDBACK OCCURS.
- THERE ARE TWO GOALS WITH THIS FEEDBACK;
 - MAKE ANY ADJUSTMENT NEEDED TO STRIKE ON THE NEXT FIRST BALL (ADJUST).
 - MAKE THE REMAINING PINS (SPARE).

HEADPIN IMPACT POINTS – RIGHT HANDED



1. Pocket: Continue to bowl a good 'strike feeling'
2. Light Pocket: Move feet 2 boards outward, pivot 1/3 board outward.
3. Split Hit: Move feet 2 boards inward, pivot 1/3 board inward.
4. Heavy Crossover: Move feet 4 boards inward, pivot 1/2 board inward.
5. Far Crossover: Move feet 6 boards inward, pivot 1 board inward.

HEADPIN IMPACT POINTS – LEFT HANDED



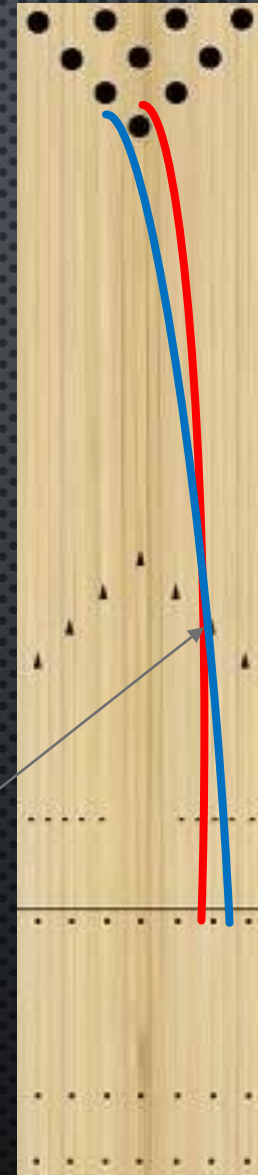
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4. Heavy Crossover: Move feet 4 boards inward, pivot 1/2 board inward.
5. Far Crossover: Move feet 6 boards inward, pivot 1 board inward.

BUT WHAT IF I DON'T STRIKE???

- MOVE YOUR FEET ON THE APPROACH THE DIRECTION THAT YOUR BALL WENT WHILE KEEPING YOUR TARGET THE SAME. (FULCRUM PRINCIPLE)
- FOR EVERY 2 BOARDS MOVED ON THE APPROACH WILL RESULT IN A 3 BOARD MOVE AT THE PINS. (GEOMETRIC PRINCIPLE)

THE LANE – FULCRUM PRINCIPLE

- First delivery is a “Far Crossover”
- What did we receive from this?
 - Feedback
- How many boards do we move on the next delivery?
 - Move 6 boards inward
- Second delivery is a “Pocket Hit”
- What did we receive from this?
 - Feedback
- How many boards do we move on the next delivery?
 - None
- In order to be successful;
 - The player must hit the same target.
 - The player must make the same delivery.
- The arrow zone target acts as “fulcrum”.



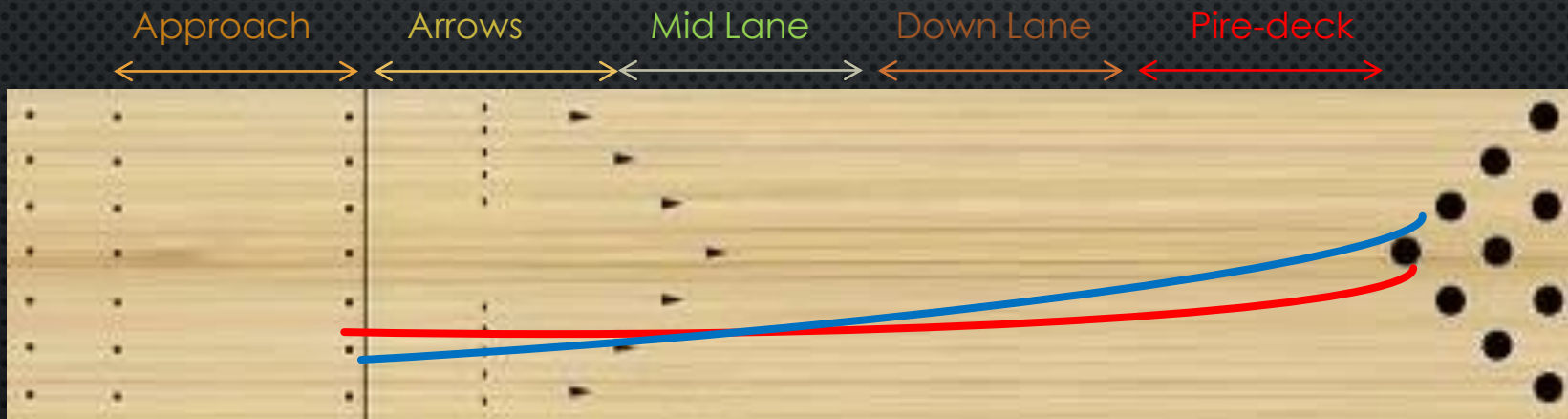
THE LANE – GEOMETRIC PRINCIPLE

The bowling lane is 75 feet long, from back of approach to head pin.

The lane can be broken into 5 – 15' zones;

- 1 - 15' delivery zone (approach to foul line)
- 4 -15' playing lane zones (arrows, mid lane, down lane, pre-deck)

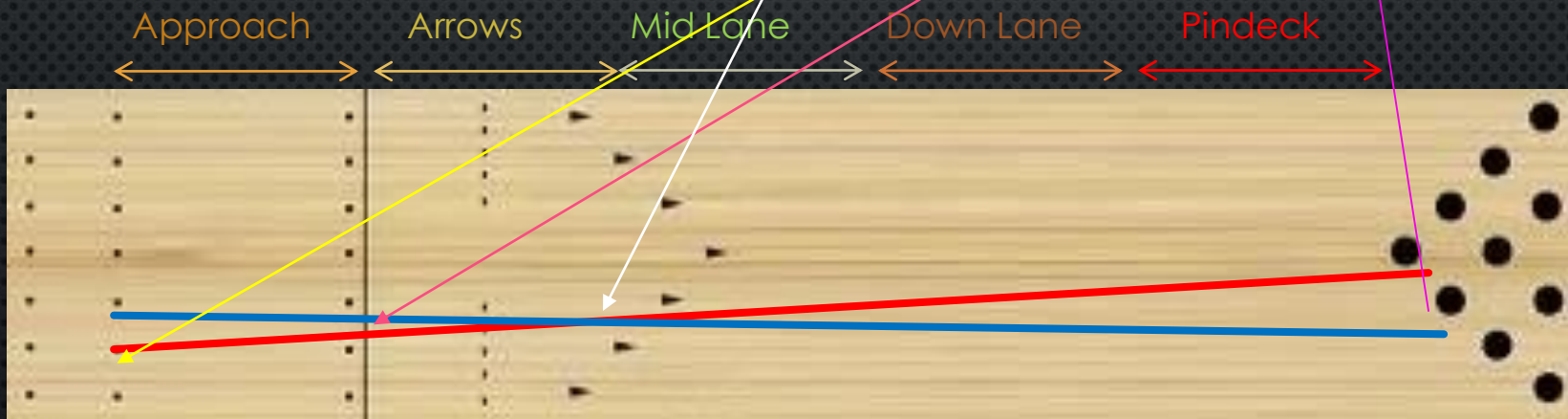
With the arrow zone being "the midpoint", then every 1 board moved from the end of the arrow zone, will move 1 board at the opposite end of the zone.



THE LANE – GEOMETRIC PRINCIPLE

With the arrow zone being “the midpoint”, then every 1 board moved from the end of the arrow zone, will move 1 board at the opposite end of the zone.

- The red and blue lines are at the same point at the “arrow zone”.
- The red and blue lines are 4 boards apart on the approach.
- The red and blue lines are 2 boards apart on the foul line.
- The red and blue lines are 6 boards apart at the pindeck.



BUT WHAT IF I DON'T HIT THE HEADPIN?

- MAKE A “MAJOR MOVE”, BY PICKING A DIFFERENT ARROW ON THE LANE TO TARGET.
- MAKE A VALID DELIVERY AND THE NEW TARGET AND PROCESS THE FEEDBACK ACCORDINGLY.

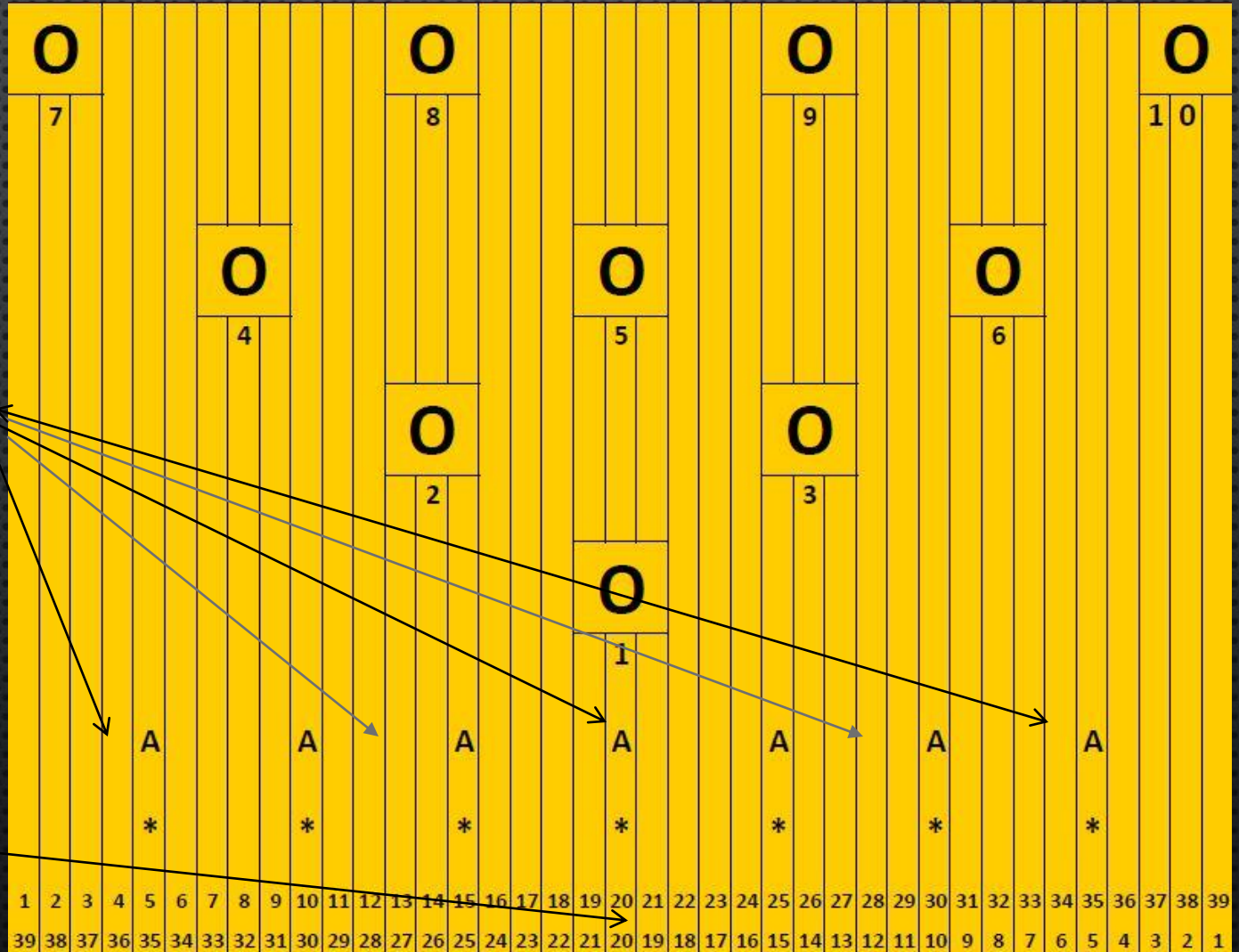
SO HOW DO I MAKE THAT SPARE?

- THERE ARE 1023 DIFFERENT SPARE COMBINATIONS POSSIBLE.
- OF THOSE 1023 , APPROXIMATELY 250 OF THEM ARE “LIKELY” TO OCCUR.
- USING THE FULCRUM AND GEOMETRIC PRINCIPLES, IT IS POSSIBLE TO MAKE ALL SPARES, USING A SYSTEM TITLED THE 3-6-9 SPARE SYSTEM.

3-6-9 SPARE SYSTEM

This system requires that;

1. The player is hitting their strike target at the arrow zone consistently.
2. The player knows their starting board on the approach.



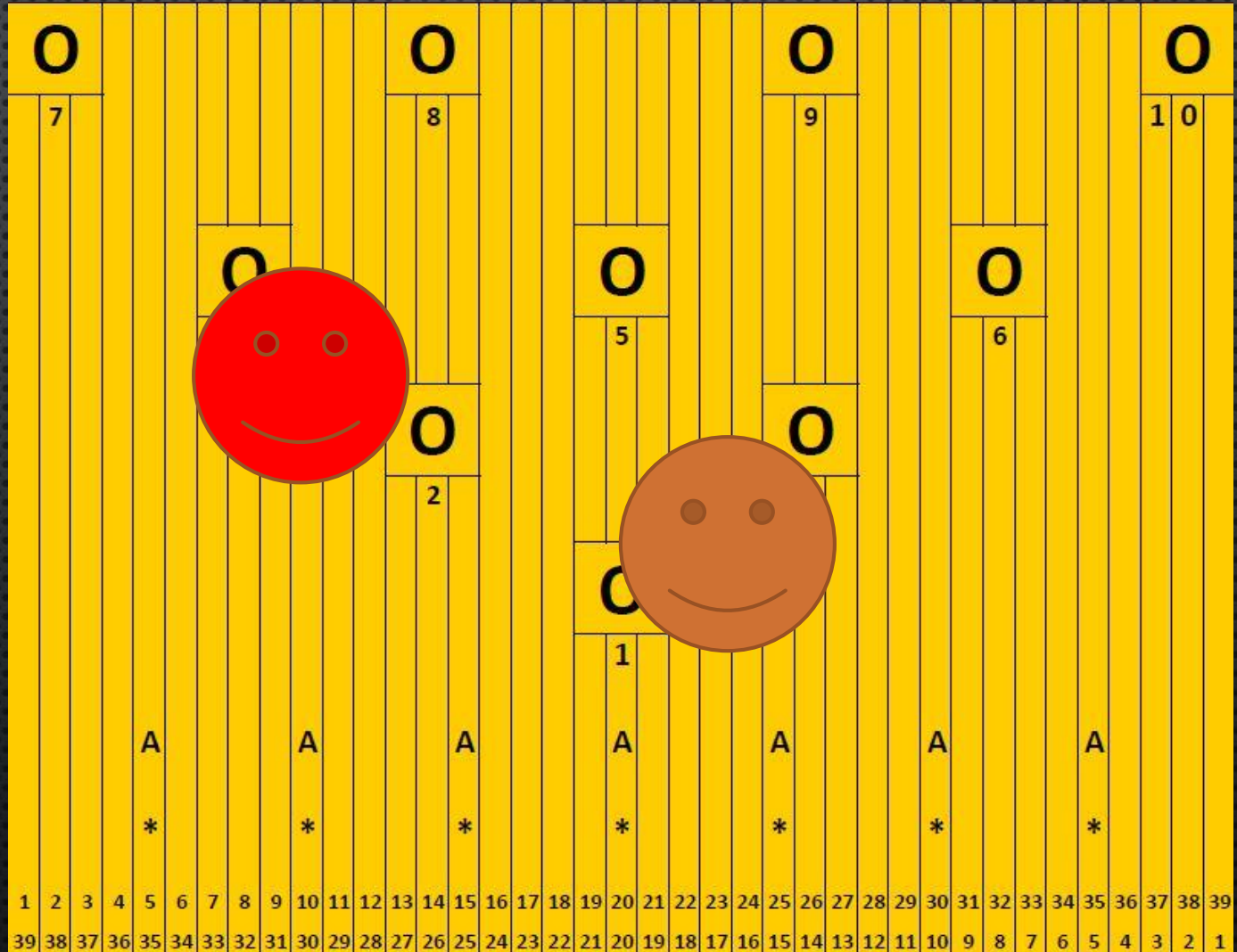
SO HOW DO I MAKE THAT SPARE?

- A “SAME SIDE” SPARE REFERS TO A SPARE THAT DOES NOT REQUIRE THE BOWLER TO MOVE THEIR TARGET, BUT ONLY THEIR FEET.
- AN “OPPOSITE SIDE” SPARE REFERS TO A SPARE THAT REQUIRES THE BOWLER TO MOVE THEIR FEET AND THEIR TARGET TO THE OPPOSITE SIDE OF THE LANE THAT THE SPARE IS ON.
 - FOR THE RH PLAYER – THE 3, 6 AND 10 PINS.
 - FOR THE LH PLAYER – THE 2, 4 AND 7 PINS.
 - THE REASON FOR THE MOVE OF FEET IS SIMPLE – GEOMETRY. THERE IS MORE SPACE TO MAKE THE LANE WHEN THERE IS MORE ANGLE TO SHOOT THE SPARE WITH.
 - ALSO KNOWN AS “CROSS LANE” SPARE SHOOTING.

3-6-9 SPARE SYSTEM

First ball was a strike delivery but the bowler left a 4 pin.

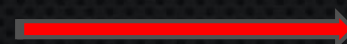
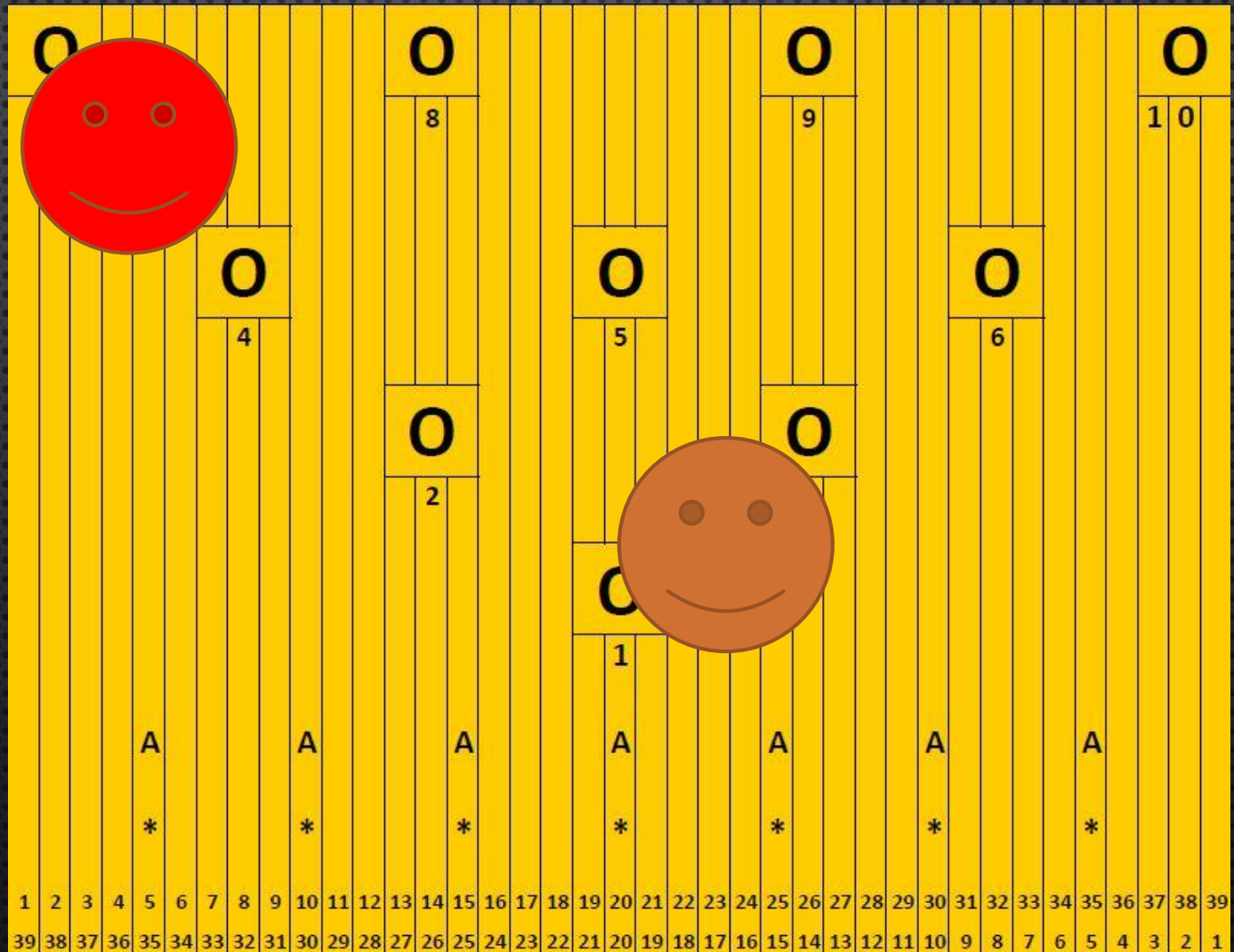
To make the 4 pin, the bowler will **move 6 boards** outward on the approach and make the same strike delivery.



3-6-9 SPARE SYSTEM

First ball was a strike delivery but the bowler left a 7 pin.

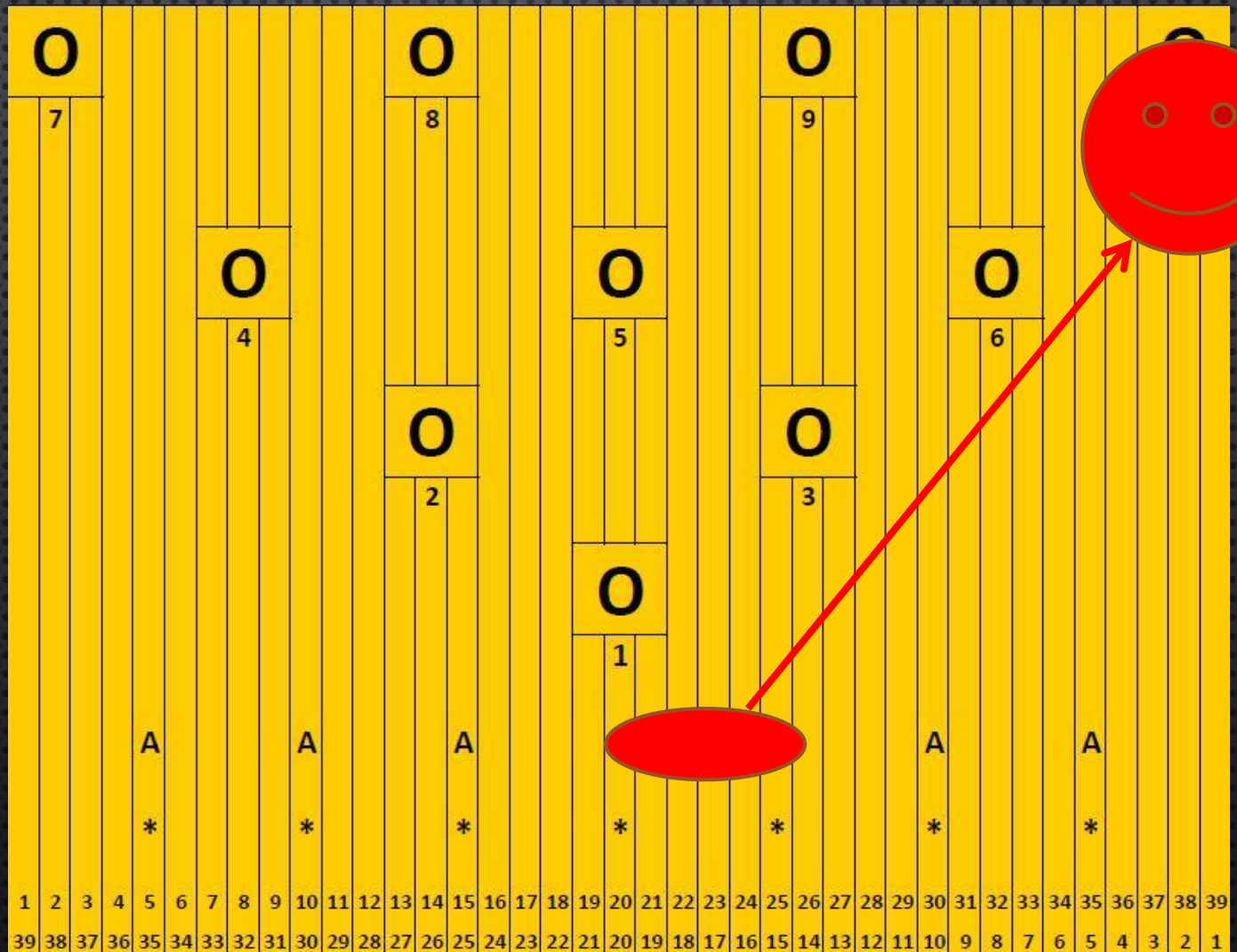
To make the 7 pin, the bowler will **move 9 boards** outward on the approach and make the same strike delivery.



3-6-9 SPARE SYSTEM – CROSS LANE

First ball was a strike delivery but the bowler left a 10 pin.

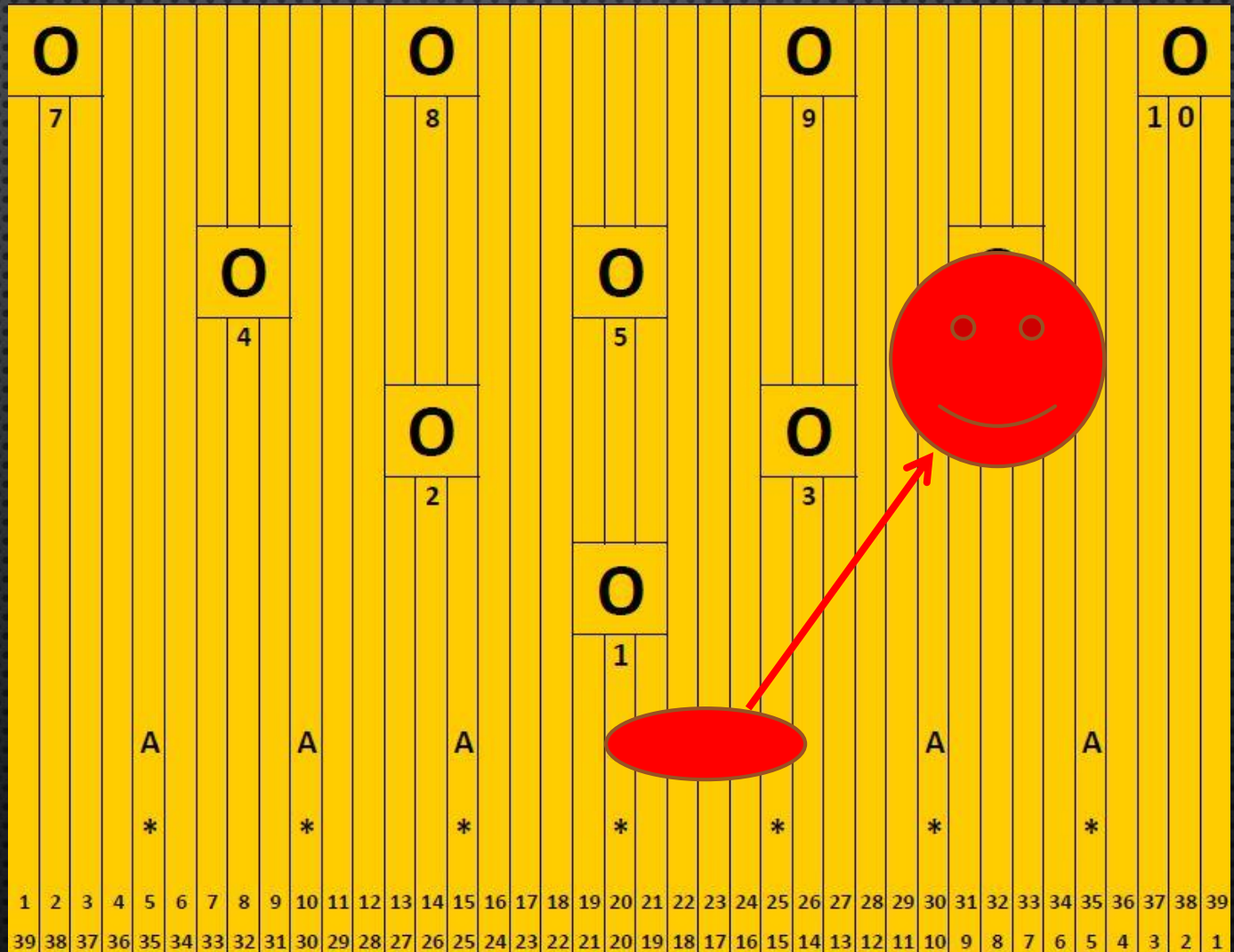
To make the 10 pin, the bowler will move to their 10 pin starting position on the approach and attempt to hit near the center arrow.



3-6-9 SPARE SYSTEM – CROSS LANE

First ball was a strike delivery but the bowler left a 6 pin.

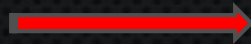
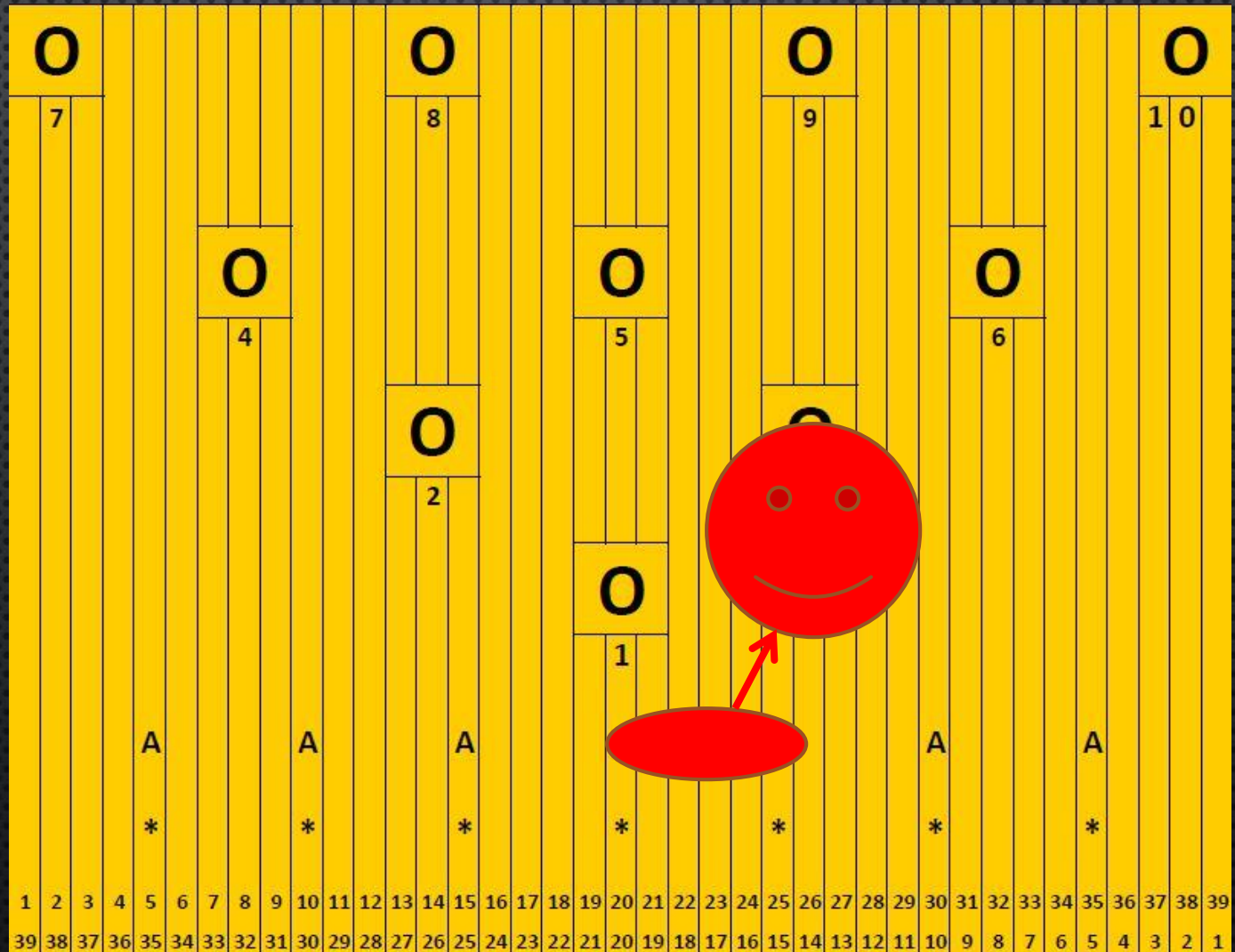
To make the 10 pin, the bowler will move 3 boards outward from their 10 pin starting position on the approach and attempt to hit near the center arrow.



3-6-9 SPARE SYSTEM – CROSS LANE

First ball was a strike delivery but the bowler left a 3 pin.

To make the 10 pin, the bowler will move 6 boards outward from their 10 pin starting position on the approach and attempt to hit near the center arrow.



SO HOW DO I MAKE THAT SPARE?

- IF THE LANE CONDITION IS UNUSUALLY “WET OR DRY”, THE SPARE SYSTEM MIGHT NEED TO BE TWEAKED TO 2-4-6 OR 4-8-12, DUE TO THE EXTERNAL FACTOR OF THE LANE CONDITION.
- PLAYERS WILL NEED TO “PIVOT ACCORDINGLY”, BASED ON HOW MUCH PIVOT THE PLAYER WAS USING ON THE FIRST BALL, ESPECIALLY ON ‘SAME SIDE’ SPARES.

QUESTIONS AND ANSWER SESSION?

- QUESTIONS?