

MSF ARC *Advanced Rider Course*

INITIALS _____

DATE _____
(First day of class)

May 2013

Homework Pre-Course Assignment

(Forms/Handouts must be completed before attending class)

File Contents

Coversheet – Homework Pre-Course Assignment

2 Forms:

FORM 1 – Sentence Completion Form

FORM 2 – Zuckerman Inventory

10 Handouts:

Handout 3 – Cornering

Handout 3A – POTs

Handout 4 – Braking and Swerving

Handout 4A – Levels of Performance

Handout 5 – Safety & Risk

Handout 6 – Rider Perception

Handout 7 – Voices & Choices

Handout 8 – Risk Offset

Handout 9 – Range Rules

Handout 10 – TCLOCS

Instructions:

- 1) Print file contents – Coversheet, 2 Forms , and 10 Handouts
- 2) Put your INITIALS on pages requiring them; use FIRST DAY OF CLASS for DATE
- 3) Follow directions/answer questions found on FORMs 1&2 / Handouts 3,4,5-8** -- **and circle at least 1 question per page that you had trouble answering, found thought provoking, was new/useful information, want to discuss more, etc**
- 4) Review Handouts 3A, 4A, and 9. Check your bike with Handout 10 before range activity
- 5) Put package together. Pages are numbered at bottom for your convenience
- 6) Bring this Homework package and BRC and/or ERC Completion Card with you to class

**First thought makes a good answer -- write those thoughts down – then go back and review before class to see if you still like it as your final answer. You do not have to know the answer to every question, but arriving without an answer/written opinion on more than a few questions is unacceptable and grounds for dismissal from course.

This assignment will be reviewed during class using a pass/fail system. Form and Handout completion is one of the determinants if you successfully complete this course. Ensure the assignment is completed. None of the questions are hard or require special expertise. Questions are meant to be thought provoking and a discussion-aid. Use them as such... even generate your own questions based off the handout theme and you'll easily complete the task.



Pg 1

FORM I

SENTENCE COMPLETION FORM

INITIALS _____

DATE _____

Directions: Prior to official course start, please complete each sentence as briefly as possible in the space provided. On the backside, complete the True-False statements. Your name is not needed.

1. A riding maneuver that I did recently that some would consider risky (or stupid) was:

2. On a scale from 1 (low) to 10 (high), where 5 is average:

a. My riding skill level is _____ because:

b. My risk-taking level is _____ because:

c. My belief that "A crash will never happen to me" is _____ because:

d. The degree to which I'm affected by peer pressure is _____ because:

e. The degree to which I mentor new riders to ride safely is _____ because:



FORM 2 ZUCKERMAN INVENTORY*

INITIALS _____

DATE _____

DIRECTIONS: Mark each statement as true (T) or false (F) as it applies to you.

- | | |
|--|--|
| _____ 1. I like to have new and exciting experiences and sensations even if they are a little frightening. | _____ 11. I like to explore a strange city or section of town by myself, even if it means getting lost. |
| _____ 2. I like doing things just for the thrill of it. | _____ 12. I would like to take a long trip with no preplanned or definite routes or timetables. |
| _____ 3. I sometimes do "crazy" things just for fun. | _____ 13. Before I begin a complicated job, I make careful plans. |
| _____ 4. I sometimes like to do things that are a little frightening. | _____ 14. I very seldom spend much time on the details of planning ahead. |
| _____ 5. I enjoy getting into new situations where you can't predict how things will turn out. | _____ 15. I tend to begin a new job without much advance planning on how I will do it. |
| _____ 6. I'll try anything once. | _____ 16. I usually think about what I am going to do before doing it. |
| _____ 7. I prefer friends who are excitingly unpredictable. | _____ 17. I often do things on impulse. |
| _____ 8. I like "wild" uninhibited parties. | _____ 18. I often get so carried away by new and exciting things and ideas that I never think of possible complications. |
| _____ 9. I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement. | _____ 19. I tend to change interests frequently. |
| _____ 10. I am an impulsive person. | |

DEMOGRAPHICS: Please complete the following demographic section. Confidential information MSF research purposes only.

- | | | |
|--|---|---|
| 20. How long have you had a motorcycle license?
_____ years _____ month | 23. Describe the motorcycle you ride most often.
Brand: _____
Model Name: _____
Engine Size: (cc) _____
Model Year: _____ | 26. Your email address:
_____ |
| 21. How long have you been riding on public roads?
_____ years _____ months | 25. Courses you've completed:
____ BRC ____ ERC
____ Track-type ____ Police-type
____ Other(s), specify:
_____ | 27. Your Gender
____ Male
____ Female |
| 22. Estimated number of miles you ride annually:
_____ miles | | 28. Your Age
____ 18-20 ____ 21-24
____ 25-34 ____ 35-44
____ 45-64 ____ 65 or Over |

29. How often do the following things apply to you? (Check ONE box on EACH line.)
- a. Ridden so fast into a curve that you felt like you might lose control
 - b. Had difficulty controlling the bike when riding fast (e.g., steering wobble)
 - c. Driven a car, van, SUV, or motorcycle within 2 hours of drinking alcohol
 - d. Performed stunts on a public road (e.g. wheelies, stoppies, burnouts)
 - d. Ridden faster than 100 mph on public roads
 - e. Have had others say they were worried about your riding ability / habits

Rarely/Never	Occasionally	Quite Often	Frequently	Almost Always/Always

30. How many times in the past year have you received a ticket for a moving violation where you were found guilty, whether or not you think you were guilty? _____
31. How many road accidents (including minor spills) have you been involved in over the past year on your motorcycle? Please write the number of all accidents, whether or not you were at fault. _____
33. Sometimes riders have the impression of barely having avoided a motorcycle accident (i.e., of having a near miss). How many times have you experienced a near miss in the last 6 months while riding a motorcycle on a public road? _____

*Used with permission



1. The most common motorcyclist crash that has no outside factors is cornering. *Why do a high percentage of riders crash in curves?*
2. Riders may have expertise but most do not know exactly where the edge of the performance envelope is hiding. *How do you determine your limits when cornering?*
3. Using good judgment to choose a good entry speed and path of travel (POT) is important for maximizing time and space margins. *Why do all things that "go wrong" in a curve usually point to a problem at entry?*
4. A Middle-Middle-Middle (M-M-M) choice might be described as a conservative choice that has neither strongly negative nor strongly positive points. Still, good judgment and skill are required, especially in choosing an appropriate entry speed. *Is there any downside in using a M-M-M POT through a curve?*
5. Factors to consider in cornering include:
 - Radius of the curve
 - Length of the curve
 - Slope of the road and curve
 - Speed
 - Traffic
 - Runoff space
 - Rider skill and judgment
 - Sight distances
 - Roadway condition
 - Motorcycle type and condition.*What are the 2 most important considerations from these factors?*
6. Motorcycles have varying degrees of lean capability, and riders have various comfort levels with how much they lean. *What factors affect lean?*
7. Upper-body-shift is a technique where a rider bends forward at the waist toward the handlebar and inward toward the inside of the curve just prior to initiating lean; this technique can reduce steering effort, improve traction, and minimize the bike's lean angle for a given turn. *How can using this technique help in emergency situations?*
8. Understanding multiple POT options in curves and acquiring the skills to be able to execute any option open up an infinite number of possibilities. *What tips would you give a new rider regarding curves?*

HANDOUT 3A

EXAMPLES OF CORNERING PATH OF TRAVEL (POT) CHOICES

[OTHER THAN THE TRADITIONAL OUTSIDE-INSIDE-OUTSIDE (O-I-O)]

1. Outside-Outside-Outside (O-O-O) Path of Travel - On a right hand curve the motorcyclist "sets up" on the outside (near the centerline) expecting to execute an O-I-O path. Near the corner entry on the outside path, the motorcyclist uses a Search-Evaluate-Execute (SEE) strategy and notices several bicyclists in single file at the right edge of the road near the apex and at the exit of the corner. The rider chooses to alter the plan to maintain an outside position through the curve (O-O-O) to maintain a margin of safety from the hazard.
2. Outside-Outside-Outside (O-O-O) Path of Travel - On a right hand curve the rider sets up on the outside (near the centerline) expecting to execute the traditional O-I-O path. Near the corner entry on the outside path the motorcyclist notices debris from a rockslide at the apex of corner. The motorcyclist chooses to alter the plan to an O-O-O path of travel.
3. Outside-Inside-Inside (O-I-I) Path of Travel - On a left-hand curve the rider sets up on the outside (near the road edge) expecting to execute the traditional O-I-O path. Near the corner exit on the outside path (the right edge of the roadway) the rider notices a horse and rider on the road shoulder. The motorcyclist chooses to alter the plan to O-I-I.
4. Inside-Inside-Inside (I-I-I) Path of Travel - On approach to a right hand corner the rider notices an on coming car erratically crossing the centerline. The rider moves to the far right (inside of the right hand curve) and maintains this path through the curve (I-I-I) in order to create and maintain the largest safety margin possible from the erratically moving automobile.
5. Middle-Middle-Middle (M-M-M) Path of Travel - After only a few curves into a twisty mountain road, the rider has noticed that there is rockslide debris on the mountainside (the rider's right) on almost every curve. The road has traveled by large motor homes that frequently cross the centerline while rounding the curves. The rider decides to slow down and choose a M-M-M path of travel through the curves to create as much space as possible between the right-side debris and the left-side motor homes.

HANDOUT 4 BRAKING AND SWERVING

INITIALS _____

DATE _____

1. For optimal braking performance, both the front and rear brakes should be used in unison. *Is there an advantage to 2-finger braking?*
2. When using the front brake lever, the initial squeeze should be gentle—just enough to achieve contact between the pads and the rotor. Then immediately following that initial contact, squeeze the lever progressively harder until the requisite level of braking pressure is achieved. *How does a rider know that front brake lever pressure is producing a skid?*
3. Total stopping distance is made up of three parts: Perception, Reaction, and Braking. Typical reaction times range from 0.75 to 1.50 seconds. *How long does it take to determine the need to make a quick stop?*
4. Multiplying MPH times 1.5 approximates feet traveled per second. *How can this be useful knowledge?*
5. Braking should be avoided when executing an aggressive swerving maneuver. *Why?*
6. Maximum braking is when brakes are applied to the fullest with no wheel lockup. *How can a rider learn the pressure needed for maximum braking force?*
7. A locked rear wheel can be handled by keeping the wheel locked until stopped or by releasing pressure when front and rear tires are in alignment. Regaining traction on a locked rear wheel that is not in alignment can produce a high-side crash. *How does a rider know that the wheels are not in alignment?*
8. A locked front wheel requires a rider to immediately release front brake lever pressure, and then re-apply appropriate pressure as needed. *Why is it not a good technique to pump the front brake lever (squeeze it in and out quickly as if pumping the brakes in a car or truck)?*
9. Grabbing a front brake lever or stabbing a rear brake pedal is not a good technique. *What factors affect how much pressure can be used in braking?*
10. Braking in a curve requires special care because when a motorcycle is leaning, the amount of traction available to transfer braking force is reduced. *How does a bike respond to abrupt throttle roll-off or brake application in a curve if steering pressure does not change?*
11. A good technique for stopping quickly in a curve is to have enough room to get the motorcycle straight up as quickly as possible to maximize the traction available for braking. *Why is this a good technique?*
12. When swerving to miss an object, avoid target fixating on the object to be missed. *Where should a rider look?*
13. Having a steady speed when swerving is better than increasing or decreasing speed when swerving. *Why?*
14. A good riding strategy is to Search-Evaluate-Execute (SEE™). The need for maximum braking or swerving is minimized with good use of the SEE strategy. *Why?*



HANDOUT 4A BRAKING IN A STRAIGHT LINE - LEVELS OF PERFORMANCE

Unsatisfactory: Performance at this level represents extremely weak braking ability with average rate of deceleration at or below 0.45g (force of gravity). Trained novice riders typically brake at levels higher than this. Performance at this level may result from the use of the rear brake only. Riders likely have little or no understanding of motorcycle braking principles and/or may even believe false principles. Riders who perform at this level are at serious risk of crashing when emergency braking is an appropriate avoidance response. They tend to significantly under brake or over brake (especially on the rear) and skid.

Basic: Performance at this level represents beginning rider ability with an average rate of deceleration in the range of 0.46g to 0.65g. Trained novice riders are expected to perform at the upper end of this range. At the lower end, performance may result from appropriate use of the rear brake with very slight application of the front brake. Riders typically have a basic understanding of proper motorcycle braking principles but their performance may show considerable variation indicating the need for regular practice. At the upper end of the range, typical performance results from appropriate use of both brakes but significantly less than maximum use of the front brake.

Proficient: Performance at this level typically represents the ability of a rider who fully understands motorcycle braking principles and regularly practices emergency braking resulting in average rates of deceleration in the range of 0.66g to 0.80g. Riders who perform in this range demonstrate confidence and control in their braking ability. They are able to consistently perform stops at this level with occasional performance at the distinguished level.

Distinguished: Performance at this level typically represents a rider who has invested significant time in gaining full knowledge of motorcycle braking principles and has worked diligently in applying those principles through regular practice. At the distinguished level, braking performance regularly exceeds an average rate of deceleration above 0.81g. Riders who regularly perform at this level have often participated in motorcycle rider training providing instruction beyond the basics.

Braking Distances – Levels of Performance

MPH	UNSATISFACTORY	BASIC	PROFICIENT	DISTINGUISHED
15	17 feet or greater	12-16 feet	9-11 feet	less than 9 feet
20	30 feet or greater	21-29 feet	17-20 feet	less than 17 feet
25	46 feet or greater	32-45 feet	26-31 feet	less than 26 feet
30	67 feet or greater	46-66 feet	38-45 feet	less than 38 feet
35	91 feet or greater	63-90 feet	51-62 feet	less than 51 feet
40	119 feet or greater	82-118 feet	67-81 feet	less than 67 feet



1. Categories of risk takers:
 - a. Know danger, but not aware of its presence
 - b. Recognize hazard, but do not think about it
 - c. Deliberately take risks after weighing consequences
 - d. Ignorant of risk
 - e. Know risks but feel personally invulnerable
 1. ***Which category do you think gets aggressive riders in trouble?"***
 2. ***Which category is the best risk-taker?***
2. Riding has 3 primary subtasks: mental, physical and social.
 - a. Mental means to process information and make decisions.
 - b. Physical means to perform skilled and properly timed actions.
 - c. Social means to legally, cooperatively and courteously mix in traffic.

How does your group rate (1-10) for each? Which subtask do experts think causes the most trouble in traffic?
3. A rider's functions are primarily to:
 - a. Search for factors
 - b. Evaluate potential risks
 - c. Execute skilled and properly timed actions well.

Is riding more a skill of the eyes and mind or a skill of the hands and feet?
4. A primary goal of a rider (who places a high value on safety) is to maintain personal and situational safety margins. A safety margin refers to:
 - a. Degree to which a rider stays away from the edge of personal skill limits.
 - b. Degree to which a rider stays away from the edge of bike or traction limits.
 - c. Degree to which a rider stays away from the edge of sufficient time/space to react to problems (traffic and environment).

Which one causes the most problems in cornering?
5. The typical motorcycle crash allows the motorcyclist just less than two seconds to complete all collision avoidance action.

What can a rider do with this much time?
6. The Hurt Study (a motorcycle crash study) found that more than half the crash-involved riders had less than five months experience on the crash motorcycle, although their total riding experience was almost three years.

Why do you think this is?

1. Visual perception, which is the Search & Evaluate portion of the SEE strategy, may be defined as seeing and understanding accurately. For practical purposes, it is identification of critical clues in traffic.

How can riders get better at perceiving?

2. Safe riding is a skill more of the eyes and mind (mental) than of the hands and feet (physical).

How does a rider improve on both aspects?

3. Having 20/20 vision is not enough. The '20' in 20/20 vision refers to the ability to see a letter 3/8 inch high from 20 feet away; 20/40 vision refers to acuity where a person must stand 20 feet away to see that letter whereas a person with 20/20 vision (considered normal) would be able to see it from 40 feet away. Since we cannot perceive all that our eyes are able to take in, perception must be a selective process.

How should a rider select what to look for?

4. Central vision is three degrees; normal peripheral vision usually exceeds 180 degrees. Peripheral vision cannot be used to detect every important factor in the environment.

Why do you think most people believe that central vision is much greater?

5. Inattentional blindness occurs when someone performing a task simply fails to see what should have been plainly visible.

What does this mean for riders?

6. It may be helpful in identifying critical clues in traffic by searching in these categories:

- a. Traffic control devices and road markings
- b. Roadway and shoulder characteristics
- c. Other traffic.

How can this be helpful?

HANDOUT 7 VOICES & CHOICES

INITIALS _____

DATE _____

Which rider voice is dominating in these choices?

Rule-Oriented, Authoritative Parent (P)

Selfish, Impulsive Child (C)

Wise, Responsible Adult (A)

- _____ Riding at the speed limit
- _____ Speeding up to get through a yellow light at a traffic signal
- _____ Riding at a speed that causes traffic to build up
- _____ Not stopping completely at a stop sign
- _____ Riding curves at 20+ MPH over the posted advisory speed
- _____ Riding after drinking
- _____ At night, keeping high beam *on* when an oncoming driver doesn't dim
- _____ Passing in a no-passing zone
- _____ Stunting on public roadways

BEHAVIOR & CHOICES

For each of the following true statements, provide an example that relates to riding:

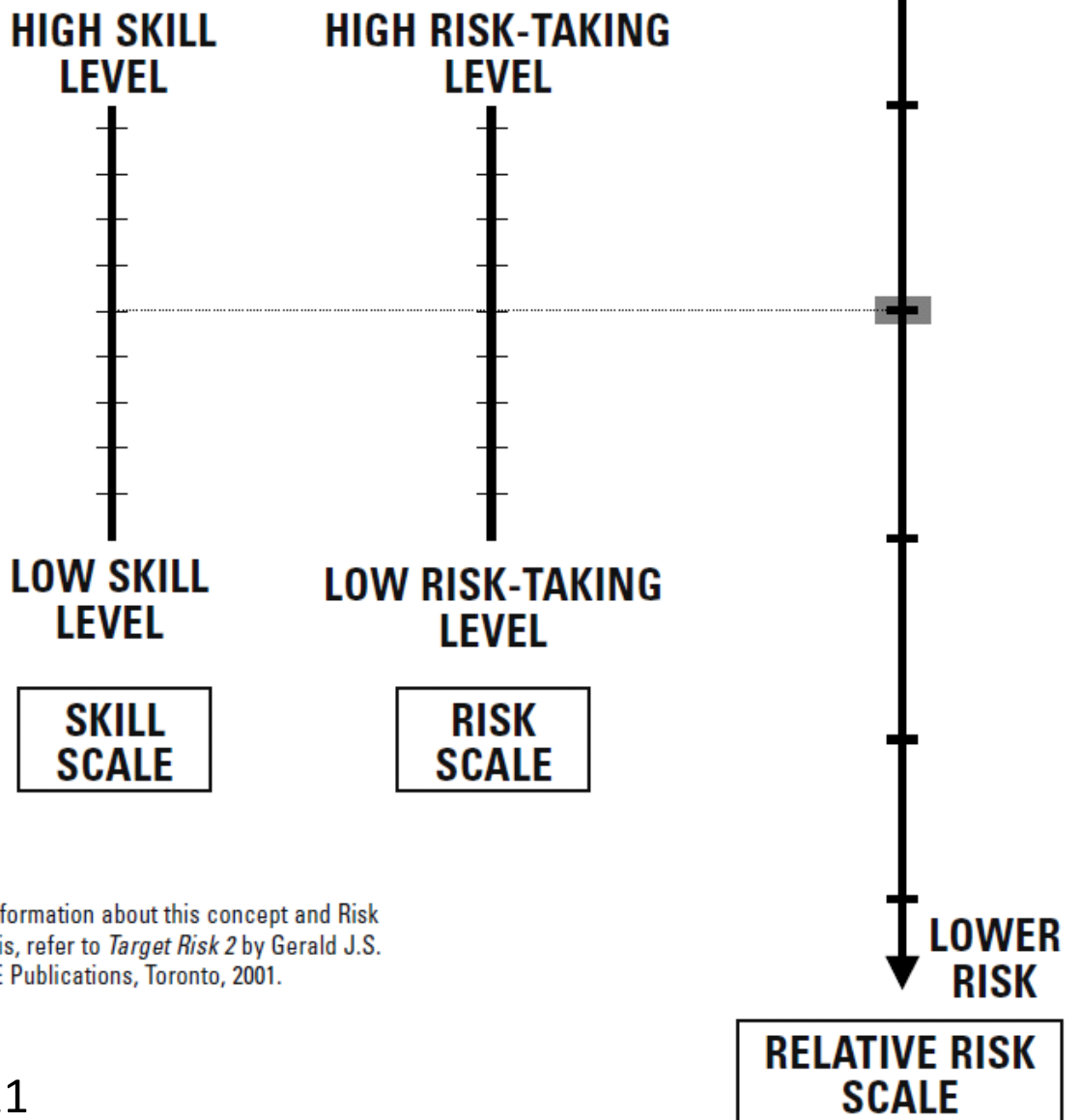
1. Riders crash usually because they choose to do things they know they shouldn't, rather than not knowing what to do.
2. Most choices are a direct reflection of the expectations of *the* peer group.
3. Riding decisions are primarily based on small, immediate payoffs rather than large, remote consequences.
4. Riders tend to repeat those experiences that resulted in a payoff if there were no negative results.
5. Temporary attitudes/emotions/feelings that are negative can have devastating effects on rider behavior.
6. Past experiences influence how a rider perceives traffic situations.

HANDOUT 8 RISK OFFSET

INITIALS _____
 DATE _____

Directions:

- 1) Place a dot on the **Skill Scale** where you assess your riding skill level to be compared to most riders you know. **(Form 1 -- your response to question 2a)**
- 2) Place a dot on the **Risk Scale** where you assess your risk-taking level to be compared to most riders you know. **(Form 1 -- your response to question 2b)**
- 3) Connect the 2 dots to form a line that touches the **Relative Risk Scale**.
- 4) **Risk Offset** is the difference between skill level and risk-taking level.
- 5) If the line is horizontal, there is **No Risk Offset** (This is *riding the edge*.)
- 6) If the line slopes up, there is **Bad Risk Offset** and a greater chance of crashing.
- 7) If the line slopes down, there is **Good Risk Offset** and less chance of crashing.
- 8) Plot what occurs when your skill level increases and your risk-taking stays the same.
- 9) Riders often increase their risk-taking after they increase their skill level, resulting in little or no risk reduction and a potential increase in crash severity.



For more information about this concept and Risk Homeostasis, refer to *Target Risk 2* by Gerald J.S. Wilde. PDE Publications, Toronto, 2001.

HANDOUT 9 RANGE RULES

1. Do not practice without RiderCoach permission.
2. Wear complete protective gear when astride the bike.
3. Know the location of the engine cut-off switch and how to use it.
4. Keep RPMs relatively low, with no extreme acceleration – smooth precision is the goal.
5. No stunting, wheelies or stoppies.
6. Stay well within time and space limits (when following or stopping behind another rider).
7. Ride within personal and traction limits.
8. Use SEE (Search-Evaluate-Execute) all the time.
9. Do not pass others unless coached to do so.
10. If you have a problem, move out of the way and a RiderCoach will help.
11. Be sure you understand an exercise before riding it.
12. Inappropriate behavior is cause for dismissal.
13. If you do not understand an exercise or become too uncomfortable to ride safely, notify a RiderCoach.
14. RiderCoaches make the final decision whether a rider may proceed.
15. Avoid hitting cones, as this is a sign of poor judgment.

GENERAL SIGNALS

- Start engine
- Ready
- Speed up
- Slow down
- Space out
- Head and eyes up, well into path of travel
- Posture
- Park

T-CLOCSSM Inspection Checklist



NSF TRAINING SYSTEMS

T-CLOCS ITEM	WHAT TO CHECK	WHAT TO LOOK FOR	CHECK-OFF	
T-TIRES & WHEELS				
Tires	Condition	Tread depth, wear, weathering, evenly seated, bulges, embedded objects.	Front	Rear
	Air Pressure	Check when cold, adjust to load.	Front	Rear
Wheels	Spokes	Bent, broken, missing, tension, check at top of wheel: "ring" = OK — "thud" = loose spoke	Front	Rear
	Cast	Cracks, dents.	Front	Rear
	Rims	Out of round/true = 5mm. Spin wheel, index against stationary pointer.	Front	Rear
	Bearings	Grab top and bottom of tire and flex: No freeplay (click) between hub and axle, no growl when spinning.	Front	Rear
	Seals	Cracked, cut or torn, excessive grease on outside, reddish-brown around outside.	Front	Rear
Brakes	Function	Each brake alone keeps bike from rolling.	Front	Rear
C-CONTROLS				
Levers and Pedal	Condition	Broken, bent, cracked, mounts tight, ball ends on handlebar levers, proper adjustment.		
	Pivots	Lubricated.		
Cables	Condition	Fraying, kinks, lubrication: ends and interior.		
	Routing	No interference or pulling at steering head, suspension, no sharp angles, wire supports in place.		
Hoses	Condition	Cuts, cracks, leaks, bulges, chafing, deterioration.		
	Routing	No interference or pulling at steering head, suspension, no sharp angles, hose supports in place.		
Throttle	Operation	Moves freely, snaps closed, no revving when handlebars are turned.		
L-LIGHTS				
Battery	Condition	Terminals; clean and tight, electrolyte level, held down securely.		
	Vent Tube	Not kinked, routed properly, not plugged.		
Headlamp	Condition	Cracks, reflector, mounting and adjustment system.		
	Aim	Height and right/left.		
	Operation	Hi beam/low beam operation.		
Tail lamp/brake lamp	Condition	Cracks, clean and tight.		
	Operation	Activates upon front brake/rear brake application.		
Turn signals	Operation	Flashes correctly.	Front left	Front right
			Rear left	Rear right
Mirrors	Condition	Cracks, clean, tight mounts and swivel joints.		
	Aim	Adjust when seated on bike.		
Lenses & Reflectors	Condition	Cracked, broken, securely mounted, excessive condensation.		
Wiring	Condition	Fraying, chafing, insulation.		
	Routing	Pinched, no interference or pulling at steering head or suspension, wire looms and ties in place, connectors tight, clean.		
O-OIL				
Levels	Engine Oil	Check warm on center stand on level ground, dipstick, sight glass.		
	Hypoid Gear Oil, Shaft Drive	Transmission, rear drive, shaft.		
	Hydraulic Fluid	Brakes, clutch, reservoir or sight glass.		
	Coolant	Reservoir and/or coolant recovery tank — check only when cool.		
	Fuel	Tank or gauge.		
Leaks	Engine Oil	Gaskets, housings, seals.		
	Hypoid Gear Oil, Shaft Drive	Gaskets, seals, breathers.		
	Hydraulic Fluid	Hoses, master cylinders, calipers.		
	Coolant	Radiator, hoses, tanks, fittings, pipes.		
	Fuel	Lines, fuel valve, carbs.		
C-CHASSIS				
Frame	Condition	Cracks at gussets, accessory mounts, look for paint lifting.		
	Steering-Head Bearings	No detent or tight spots through full travel, raise front wheel, check for play by pulling/pushing forks.		
	Swingarm Bushings/Bearings	Raise rear wheel, check for play by pushing/pulling swingarm.		
Suspension	Front Forks	Smooth travel, equal air pressure/damping, anti-dive settings.	Left	Right
	Rear Shock(s)	Smooth travel, equal pre-load/air pressure/damping settings, linkage moves freely and is lubricated.	Left	Right
Chain or Belt	Tension	Check at tightest point.		
	Lubrication	Side plates when hot. Note: do not lubricate belts.		
	Sprockets	Teeth not hooked, securely mounted		
Fasteners	Threaded	Tight, missing bolts, nuts.		
	Clips	Broken, missing.		
	Cotter Pins	Broken, missing.		
S-STANDS				
Center stand	Condition	Cracks, bent.		
	Retention	Springs in place, tension to hold position.		
Side stand	Condition	Cracks, bent (safety cut-out switch or pad equipped).		
	Retention	Springs in place, tension to hold position.		