

CALCULATING THE DISTANCE

BIG IDEA

Students gain a greater appreciation for the magnitude of Rick Hansen's Man In Motion World Tour and the incredible achievements Rick and his team accomplished.

CURRICULUM LINKS

Math: grades 4-7

LEARNING OBJECTIVE

Students will examine mathematical problems evolving out of the day-to-day challenges of the Man In Motion World Tour.

MATERIALS


- Appendices 1 through 4
- calculators (optional)

LESSON LENGTH

Five 10-minute daily math problem solving activities or one 50-minute block.



PART A: TEACHER WORD PROBLEMS AND ANSWER KEY

 **TEACHING TIP:** *When converting miles to kilometres the Rick Hansen Foundation uses 1.609 as the conversion factor. Also, wheeling time did not include travel time from continent to continent, sick days or important promotional events essential for the success of the Tour.*

PROBLEM 1: Grades 4/5

If Rick travelled 40,075 km over 470 wheeling days, on average how many km did Rick travel per day?

ANSWER: $40,075 \text{ km} / 470 \text{ days}$
 $= 85.26 \text{ km} / \text{day}$

PROBLEM 2: Grades 4/ 5

Rick and his team travelled 40,075 km (the circumference of the earth) while on the Tour. The total cost of the Tour was \$1.7 million over three years. What was the average cost per km for the Tour? Using this average cost, how much did it cost Rick to cross Canada? He travelled 11,555 km across Canada.

ANSWER: *Step One:* $\$ 1.7 \text{ million} / 40,075 \text{ km} = \$ 42.425/\text{km}$
Step Two: $\$ 42.42 \times 11,555 = \$ 490,163.10$



PROBLEM 3: Grades 6/7

How many km did Rick and his team travel from:

- 1 Vancouver, British Columbia, Canada to Yuma, Arizona, USA
- 2 Edinburgh, Scotland to London, England
- 3 Sydney, Australia to Beijing, China
- 4 William's Lake, British Columbia to Vancouver, British Columbia

ANSWER: These are two-step problems. First, students need to calculate the miles travelled between two cities by subtracting the cumulative miles travelled at the start point from the cumulative miles travelled at the end point. Second, they need to convert miles to km.

Vancouver to Yuma ($1,628 - 0 = 1,628$ miles \times ___ km/mile = ___ km)

Edinburgh to London ($5,230 - 4,815 = 415$ miles \times ___ km/mile = ___ km)

Sydney to Beijing ($13,962 - 11,049 = 2,913$ miles \times ___ km/mile = ___ km)

William's Lake to Vancouver
($23,893 - 25,251.74 = 1,358.74$ miles \times ___ km/mile = ___ km)

PROBLEM 4: Grades 6/7

If Rick wheeled for ten hours per day and he was capable of wheeling the average rate of 70 strokes per minute, how many strokes would he have made per wheeling day? If Rick wheeled for 470 days, how many strokes did he make on the entire Tour?

ANSWER: $70 \text{ strokes/minute} \times 60 \text{ minutes/hour} \times 9 \text{ hours} = 37,800$ per day and $17,766,000$ strokes for the entire Tour. (Based on 470 wheeling days)



PART B: **LESSON CONCLUSION**

Using the pie chart found on Appendix Two for this lesson, review the success of the tour with your class (i.e. money raised by Rick's team, the goals he has achieved as an individual, and what the future holds for the Rick Hansen Foundation).

Ask your students to analyze the Rick Hansen Foundation Impact pie graph by answering the following questions (see Appendix #2 for pie graph).

What is the total amount raised by the Rick Hansen Foundation to date?

How much of this money is going towards:

- Research and Rehabilitation
- Prevention and Awareness
- Legacy Fund
- Sport
- Research and Endowments

APPENDIX ONE

LESSON PLAN TWO

Word Problem Overhead

PROBLEM 1

If Rick travelled 40,075 km over 470 wheeling days, on average how many km did Rick travel per day?

PROBLEM 2

Rick and his team travelled 40,0752 km (the circumference of the earth) while on the Tour. The total cost of the Tour was 1.7 million over three years. What was the cost per km for the Tour? Using this average cost, how much did it cost Rick to cross Canada? He travelled 11,555 km across Canada.

PROBLEM 3

How many km did Rick and his team travel from:

- 1 Vancouver, British Columbia, Canada to Yuma, Arizona, USA
- 2 Edinburgh, Scotland to London, England
- 3 Sydney, Australia to Beijing, China
- 4 William's Lake, British Columbia to Vancouver, British Columbia

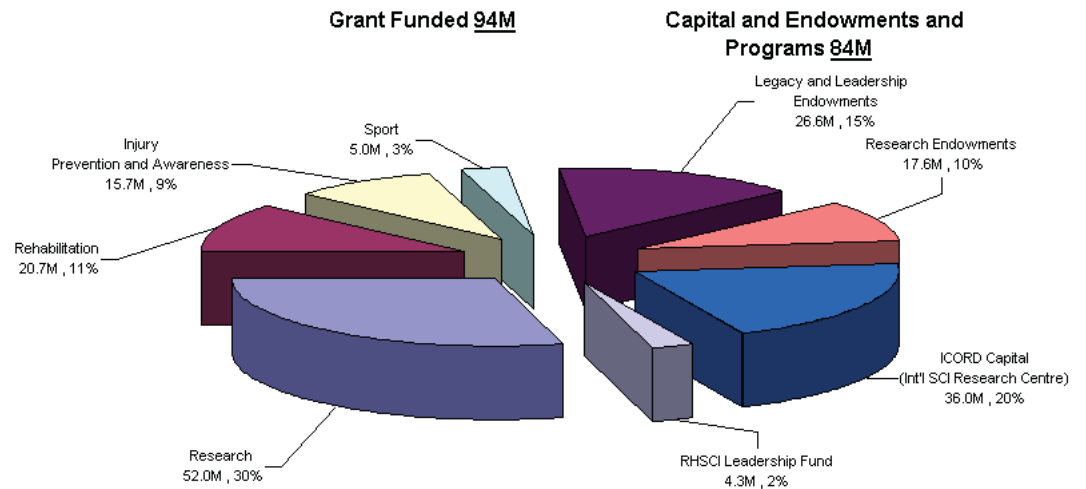
PROBLEM 4

If Rick wheeled for ten hours per day and he was capable of wheeling the average rate of 70 strokes per minute, how many strokes would he have made per wheeling day? If Rick wheeled for 470 wheeling days, how many strokes did he make on the entire Tour?

APPENDIX TWO
LESSON PLAN TWO

Pie Graph

THIS PIE CHART REPRESENTS NATIONAL IMPACT ON SPINAL CORD INJURY
TOTAL \$178M



QUESTIONS

- 1 What is the total amount raised by the Rick Hansen Foundation to date?
- 2 How much of this money is going towards:
 - Research and Rehabilitation
 - Injury Prevention and Awareness
 - Legacy & Leadership Endowments/Funds
 - Sport
 - Research Endowments & Research Centre



APPENDIX THREE
LESSON PLAN TWO

Man In Motion
World Tour Facts

TOUR FACTS

DATES OF WORLD TOUR:
March 21, 1985 - May 22, 87

DISTANCE COVERED:
The circumference of earth

COUNTRIES TRAVELED THROUGH:
34 countries, 4 continents

WHEELING SCHEDULE:
85km / per day

AVERAGE WHEELING SPEED:
8-10km/h (city), 13-15km/h (rural)

DAYS ON THE ROAD: 792 days

POSTCARDS WRITTEN: 2172

FLAT TIRES: 126

GLOVES WORN OUT: 94

WHEELCHAIR TIRES WORN OUT: 160

TIMES ROBBED: 4

AVERAGE TIME SPENT WHEELING A DAY:
8 hours

MOST HOMESICK MOMENT:
Terry Fox Garden in Jerusalem

BEST SUNRISE:
Toledo, Spain

BEST SUNSET:
Tel Aviv, Israel

MOST HOURS SPENT WHEELING IN 1 DAY:
16 hours, Oct. 31, 1985

MOST MEDIA INTERVIEWS IN 1 DAY:
18 in Winnipeg, Manitoba

BIGGEST CROWD:
Tianjin, China

HIGHEST SUMMIT:
1,700 meters in the Alps

LETTERS RECEIVED: 200,007

BASEBALL CAPS RECEIVED: 1091



What was the Man In Motion World Tour?

An epic journey of equal to the circumference of the earth, through 34 countries by wheelchair. It took more than two years and two months.

Why was Rick wheeling around the world?

To create awareness of the unlimited potential of people with disabilities and to raise funds to support spinal cord injury research, rehabilitation, prevention, wheelchair sports and awareness.

THE HISTORY

1973 - 15-year old Rick is left a paraplegic from a car crash.

1976-1984

-Rick becomes a wheelchair athlete and wins 19 wheelchair marathons including three world championships.

-Rick competes for Canada at the 1984 Olympics.

1985-1987 -The Man In Motion World Tour

-\$26 million is raised to support spinal cord injury programs.

-Awareness is raised about the potential of people with disabilities

-Attention is focused on the barriers that stand in the way of people reaching their full potential.

-Rick's amazing journey is recorded in the Guinness Book of World Records.

APPENDIX FOUR
LESSON PLAN TWO

Man In Motion
World Tour
Equipment List

EQUIPMENT

- One fully camperized motor home
- One car for the advance person
- Two bicycles for the crew escorts
- Various wheelchairs, rims and parts

WHEELCHAIRS

For the first half of the Man In Motion World Tour, Rick's main chair was supplied by fellow marathoner, Peter Brooks of B.C. and included a frame made of aerodynamic tubing, similar to aviation tubing, angled at 50 degrees. The rear wheels were cambered and the entire chair was as wide and long as marathon rules allow (47 inches long with front wheels at the same width as the rear wheels) for maximum stability. The front wheels were 18 inches in diameter and the rear wheels were standard bicycle racing tires.

The steering system was made up of tie-rods, which joined the front wheels, and a compensator which was composed of a lever to adjust the line of the front wheels to suit the camber of the road surface. The lever had two springs which attached to either side of the tie-rod system. The braking system used the standard caliper method with the brake handle attached to the steering handle. The seat differed from the other chairs Rick used in that it was made of cloth, adjusted to fit by side-straps, as opposed to the usual fiberglass custom-molded bucket seat. Because of the flexibility of this cloth seat, there was not "tilting" effect as was found with the bucket seat. The chair weighed in at 18 pounds and cost \$1,500 with modifications.

For the second half of the Man In Motion World Tour (from Australia to home), the chair was designed for Rick by Jerry Smith of Florida. The chair adjusted from more than one position and the templates on either side of the seat adjusted the wheels for different terrains and worked different muscles to cut down on injuries.

Unlike bicycles, wheelchairs do not have gears. Therefore, the rim sizes were changed with the terrain and the steeper the grade, the larger the push rim. Rick's push rims ranged in size from 12" to 20". These push rims were mounted on the spokes of wheels ranging in size from 24" to 27".

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LESSON PLAN TWO

Man In Motion
World Tour
Equipment List

A small mileage and speed counter (Cat Eye Solar computer) on the chair was used for official recording of the mileage.

WINTER CLOTHING AND CHAIR

As Rick traveled across Canada during winter, special care was needed to ensure that he could wheel through snow while keeping warm in sub-zero weather. Simon Fraser University volunteered to design a computerized winter suit that allowed Rick to monitor his leg temperatures to ensure his legs did not freeze. BMX tires, small in diameter, with knobby treads, were put into a 4-wheel drive wheelchair. Snow chains could be added if needed. The chair was chain-driven with universal joints on the front wheels and all four wheels had brakes. The maximum speed with the winter chair was 20 miles per hour.

The winter clothing was pre-tested in Vancouver by volunteers, wheelchair athletes in simulated freezing temperatures to ensure it was efficient and the sensors in the suite correctly monitored body temperatures.

APPENDIX FIVE
LESSON PLAN TWO

Man In Motion
World Tour Log

DATE	COUNTRY	CITY	ACCOMPLISHMENT	MILE
1985				
Mar 21	Canada	Vancouver BC	Rick leaves Oakridge Shopping Centre, Vancouver	0
Mar 26	US	OR	Enters Oregon	314
Apr 04	US	Siskiyou Peak,	4,350 ft.	687
Apr 11	US	San Francisco, CA	Crosses Golden Gate Bridge	970
Apr 13	US	San Jose, CA	Passes 1000 mile mark	1,000
Apr 26	US		Change from surf and sand to desert	1,500
Apr 27	US	Yuma, AZ	Enters Arizona, high winds and rough roads	1,628
Apr 30	US	Wickenburg, AZ	Temperature 104 degrees	1,769
May 09	US	Deming, NM	Enters New Mexico, does video tape for David Foster	2,283
May 12	US	El Paso, TX	Enters Texas	2,424
May 13	US	Hilltop, TX	Whole family- Mom, Pop, 9 kids-come out to road to donate	2,500
May 17	US	Comstock, TX	Tarantula tries to attack Rick's chair on road	2,712
May 20	US	Uvalde, TX	Caught in severe thunderstorm	2,855
May 22	US	Blanco, TX	Wheels past the Alamo	3,000
May 24	US	Austin, TX	Governor makes Rick Honorary Citizen of Texas	3,072
May 28	US	Houston, TX	Very high humidity	3,226
May 30	US	Lake Charles, LA	Enters Louisiana, great reception at state line	3,368
Jun 06	US	Long Beach, MS	Enters Mississippi	3,728
Jun 07	US	Mobile, AB	Enters Alabama	3,798
Jun 10	US	Navarre, FL	Enters Florida late June	3,938
Jul 4	Ireland	Dundalk	1st day wheeling in Europe, Rick & Amanda sick	4,764
Jul 5	Scotland	Edinburgh	Glasgow to Edinburgh	4,815
Jul 08	England	Alawick	Enters England	4,866
Jul 11	England	Leeds	Getting into very heavy and dangerous traffic	4,978
Jul 18	England	London	Wheels past major landmarks: London Bridge, Buckingham Palace, Parliament, etc. - lose Rick after a wrong turn	5,230
Jul 20	France	Dieppe	Enters France, still very sick	5,247
Jul 27	Belgium	Brugge	Rick lays wreath at Military Cemetery, Agadem, Canadian Embassy staff present	5,432
Jul 29	Belgium	Wuustweezel	"Cold, miserable, rainy, grouchy"	5,477
Jul 30	Holland	Rotterdam	Enters Netherlands, great border reception	5,525
Aug 1	Netherlands	Amsterdam	Finally nearing 100% health again after flu	5,654
Aug 05	W. Germany		Enters West Germany	5,788
Aug 10	Denmark		Enters Denmark	6,080
Aug 13	Sweden		Enters Sweden	6,228
Aug 16	Norway		Enters Norway	6,369
Aug 19	Sweden		Re-enters Sweden	6,498
Aug 25	Finland		Enters Finland	6,786

APPENDIX FIVE
LESSON PLAN TWO

Man In Motion
World Tour Log
continued

DATE	COUNTRY	CITY	ACCOMPLISHMENT	MILE
Sept.	Soviet Union	Moscow	Enters Soviet Union - wheels 3.1 miles	
Sep 10	Poland	Gdynia	Wonderful reception all over Poland, cheers & flowers	7,000
Sep 20	Czechoslovakia	Olesnicapol	Enters Czechoslovakia, good welcome	7,409
Sep 24	Austria	Horn	Enters Austria	7,569
Oct 2	Austria	Feldkirk	Climbs 2700', steepest/longest ascent yet	
Oct 3	Switzerland	Zurich	Enters Switzerland	7,983
Oct 10	France	Chembery	Re-enters France	8,233
Oct 18	Spain	Thermes Du Boulon	Enters Spain	8,616
Oct 22	Spain	Barcelona	Mobile home vandalized, thief interrupted, nothing stolen	8,756
Oct 29	Spain	Badejoz	Vandalized, Nike clothes stolen from mobile home, ramp installed at City Hall in honour of Rick	9,115
Oct 30	Portugal	Montemoranova	Enters Portugal, numbers in the streets similar to Poland, incredibly friendly	9,194
Nov 06	Spain	Huelvas	Re-enters Spain	9,592
Nov 08	Spain	Huelvas	Shoots McDonald's promo video	9,592
Nov 12	France	Marseilles	Re-enters France	9,799
Nov 18	Italy	La Spezia	Enters Italy, visits Monaco on way	9,960
Nov 19	Yugoslavia	Split	Enters Yugoslavia	10,182
Nov 25	Italy	Rome	Re-enters Italy	10,324
Nov 27		Vatican City	General audience with Pope John Paul II	
Dec 04	Greece	Prevesa	Enters Greece	10,684
Dec 05	Greece	Prevesa	Rick taken to Emergency Hospital with exhaustion	10,684
Dec 09	Bahrain		Enters Bahrain	10,846
Dec 11	Jordan	Amman	Enters Jordan	10,930
Dec 12	Israel	Tel Aviv	Crosses King Hussein/Allenby Bridge	10,968
Dec 13	Israel	Tel Aviv	Reception hosted by Prince Ra'ad & Princess Majedeh	
Dec 14			Flies Israel - Copenhagen-Auckland	
1986				
Dec 15 - Jan 3	New Zealand	Auckland	Xmas in Auckland, New Zealand	11,049
Jan 23	Australia	Sydney	Enters Australia	11,049
Feb 01	Australia	Kingston	Rick sprayed with whipped cream by crew at 12,000 mile mark	12,000
Feb 11	Australia	Melbourne	Hits halfway mark - 72, 451.49 miles [20,036 km]	12,450
Mar 21	Australia	Coomera	First anniversary on the road	
Mar 23	Australia	Birdsville	Rick flies to Birdsville to do Nike poster shoot	
Mar 26	Australia	Olympia	Sunshine Coast, over the Gunaldo Mt. Range (rainforest)	
Apr 8			Leaves Australia, flies to Hong Kong via Singapore (overnight stop only in Singapore)	13,951
Apr 10	Hong Kong		Hong Kong wheels 10.7 miles around Hong Kong	13,951
Apr 11	China	Beijing	Enters mainland China	13,962

APPENDIX FIVE
LESSON PLAN TWO

Man In Motion
World Tour Log
continued

DATE	COUNTRY	CITY	ACCOMPLISHMENT	MILE
Apr 12	China	Beijing	Visits Tienamen Square, meets Deng Dufang (Premier Deng's son)	
Apr 13	China		Does the Great Wall shoot	
Apr 14	China	Tian Jin	Mobbed by thousands of people - an overwhelming experience	
Apr 23	China	Yuzchou	1st Canadians allowed to see the Terra Cotta Warriors	
Apr 27	China	Naqjing	Visits Dr. Sun Yet San Monument	
May 4	Korea	Seoul	Enters Korea	14,611
May 7	Korea	Taegu	"Memorably awful day": nothing went as planned	
May 9	Korea	Seoul	Meets Governor of Province, Mayor of Seoul	
May 13	Japan	Tokyo	Meets the Mulroneys in Seoul & enters Japan	14,759
May 21	Japan	Abashiri	Passes 15,000 mile mark, Nancy and Amanda 'cheer' with homemade pompoms (Abashiri is sister city of Port Alberni)	
May 31	Japan	Muroran	Goes through Shiraoui, sister city of Quesnel	
Jun 16	Japan		Leaves Japan	
Jun 21	US	Miami, FA	Re-enters US at Miami, Florida	15,748
Jun 28	US	Miami, FL	Does Canada Day hook-up with Senator Pat Carney	
Jul 8	US	Savannah, GA	Enters Savannah Georgia	16,326
Jul 9	US	Savannah, GA	Made Honorary Citizen of Georgia by Secretary of State	
Jul 10	US	Allendale, SC	Enters South Carolina	16,326
Jul 15	US	Rockingham, NC	Enters North Carolina	16,524
Jul 20	US	Henderson, NC	Crew become surrogate parents to 4 baby opossums: Katrina, Max, Mat, & Murph	16,674
Jul 21	US	Richmond, VA	Enters Virginia	16,729
Jul 28	US	Washington, DC	Enters Washington, DC, Amanda's 27th birthday	16,884
Jul 29	US	Baltimore, MD	Meets Governor and Lt. Governor of Maryland	16,956
Jul 31	US	Philadelphia, PA	Enters Pennsylvania	17,060
Aug 2	US	Princeton, NJ	Enters New Jersey	17,114
Aug 3	US	New York, NY	Enters New York City, wheels past sights	17,166
Aug 4	US	New York, NY	US New York on ABC Today Show, meeting with Mayor Koch, Michael J. Fox	
Aug 5	US	New York, NY	Formal luncheon with major corporate sponsors, followed by a private tour of the U.N. Headquarters by Chef de Cabinet of the Executive Office of the Secretary General	
Aug 6	US	Connecticut	Enters Connecticut	17,211
Aug 10	US	Rhode Island	Passes through Rhode Island	17,366
Aug 11	US	Boston, MA	Boston enters Massachusetts	17,416
Aug 14	US	New Hampshire	Enters New Hampshire	17,450
Aug 15	US	Maine	Enters Maine	17,505
Aug 18	US	Maine	US last wheeling day in US	
Aug 24	Canada	St John's	Rick returns to Canada; enters Newfoundland	17,720
Aug 25	Canada	Cape Spear	First day wheeling in Canada	

PERSEVERANCE STRENGTH TEAMWORK HOPE LEADERSHIP COURAGE DETERMINATION VISION INTEGRITY CITIZENSHIP INSPIRATION AND MAKING A DIFFERENCE IN THE LIVES OF OTHERS

APPENDIX FIVE
LESSON PLAN TWO

Man In Motion
World Tour Log
continued

DATE	COUNTRY	CITY	ACCOMPLISHMENT	MILE
Sep 10	Canada	Sidney, NS	Enters Sydney, Nova Scotia	18,301
Sep 23	Canada	Prince Edward Island	Enters Prince Edward Island	18,730
Sep 29	Canada	New Brunswick	Canada enters New Brunswick, Charlottetown, Shediac	18,922
Sep 30	Canada	Moncton	Rick and Amanda announce their engagement	
Oct 3	Canada	St. John	Rico joins tour	
Oct 9	Canada	Notre Dame de Lac	Enters Quebec, joined by W.C. athlete André Viger	19,270
Oct 18	Canada	Ville de Repentigny	Rick drops the puck in Montreal vs Winnipeg game, standing ovation	
Oct 24	Canada	Ottawa	Enters Ontario with full pomp and ceremony	19,773
Oct 26	Canada	Ottawa	Mulroney presents \$1,000,000 cheque	
Oct 27	Canada	Carleton Place	2nd motor home fire	19,870
Oct 31	Canada	Brighton		20,000
Nov 29	Canada	London	Mike Pomponi joins crew (from here to BC border) as mechanic	20,230
Dec 2	Canada	Orangeville	First heavy snowfall, Rick averages 6 mph	20,839
Dec 5	Canada	Port Severn	David Foster cycles from Barrie to Orillia with tour, bridge in Coldwater, ON named after Rick	20,939
Dec 10	Canada	Britt	Snow squalls all day - traveling through the 'snow belt' of Ontario	21,038
Dec 19	Canada	Batchawana	Kids put up giant X-mas cards every kilometre on highway and sing carols every few miles	21,351
Dec 28	Canada	Montreal River	Halfway across Canada	21,407
Dec 23	Canada	Wawa	Rick comes down with a bladder infection - decides to stay at least until Boxing Day	21,474
Dec 29	Canada	Marathon	Minus 72 degrees	21,545
1987				
Jan 3	Canada	Pass Lake	Starts on Terry Fox Courage Highway	21,693
Jan 4	Canada	Thunder Bay	Passed Terry Fox Memorial - "A major psychological breakthrough"	21,722
Jan 16	Canada	Falcon Lake	Enters Manitoba	22,034
Jan 21	Canada	Winnipeg	Rick drops puck - Oilers vs Jets game	
Feb 2	Canada	Moosomin	Enters Saskatchewan, greeted by Premier Devine - "Only two more borders to go!"	22,393
Feb 07	Canada	Regina	Wheelchair-accessible park named after Rick	22,531
Feb 15	Canada	Medicine Hat, AB	Enters Alberta	22,776
Mar 19	Canada	Jasper, AB	Climbed the Obed Summit	23,513
Mar 20	Canada	Valemont, BC	Crossed the BC border 2:00pm (BC time) - lots of media, family and friends	23,602
Mar 22	Canada	Valemont, BC	First day wheeling in British Columbia	
Apr 1	Canada	Blue Lake, BC	Rick now wheeling in very familiar terrain	
Apr 2	Canada	William's Lake, BC	Huge media coverage	23,893
Apr 9	Canada	Kamloops, BC	People Magazine interview	24,099
Apr 16	Canada	Revelstoke	Only 1000 miles to go	24,302

APPENDIX FIVE
LESSON PLAN TWO

Man In Motion
World Tour Log
continued

DATE	COUNTRY	CITY	ACCOMPLISHMENT	MILE
Apr 17	Canada	Roger's Pass, BC	Did the Pass "It was easy"	24,326
Apr 19	Canada	Golden, BC	2 km from Alberta border "psychologically defeating"	24,376
Apr 28	Canada	Nelson, BC	City of Nelson drops blossoms from a helicopter onto Rick	24,688
May 1	Canada	Trail, BC	Tim Frick rejoins tour	24,737
May 2	Canada	Rossland, BC	Did Rossland/Trail Pass, 1500 ft rise in 6 miles: rain, sun, hail, and snow	24,767
May 7	Canada	Kelowna, BC	24,901 miles today: circumference of the world!	24,901
May 14	Canada	Princeton, BC	Steve Fonyo drops by to say "Hi"	25,065
May 17	Canada	Manning Park, BC	Last mountain pass	25,133
May 18	Canada		Hope/Princeton Highway "The Big Descent"; snow	
May 19	Canada		Rest "Health: excited"	
May 20	Canada	Abbotsford, BC	"Emotions running high" 2 days left	25,226
May 22	Canada	Vancouver, BC	"Health: great" Rick rolled in to Oakridge shopping centre	25,251
May 23	Canada	Vancouver, BC	Huge public celebration at BC Place Stadium in Vancouver	