

Lesson: World Record Marathon Time Game
Grades: 4-6
Skills: Number sense, time
Time: 30 minutes

As of 10/2006, the world record for the marathon is:

2:04:55

(You can check the internet to see if this time has been beat!)

How to play:

Each player sets up their "clock" with spaces for hours, minutes and seconds as below. Player 1 rolls a die and enters the digit they rolled in one of the spaces. If the digit is a 6 and the only places left are the ten minutes and ten seconds places, the player rolls again until they get a number less than 6 for that space. Player 1 rolls until they fill all the spaces.

Player 2 repeats and fills in all numbers for their time.

When done filling in their times, players must figure out whose number is closer to the marathon record of 2:04:55. The player who is closer wins!

Player 1

<i>Hours</i>		<i>Minutes</i>		<i>Seconds</i>
_____	:	_____	:	_____

Player 2:

<i>Hours</i>		<i>Minutes</i>		<i>Seconds</i>
_____	:	_____	:	_____

Lesson: A Marathon Challenge
Grades: 5-6
Skills: Problem solving, number sense, decimals
Time: 25 minutes

What to do:

Read the problem to the students. When they are finished, ask them to share the strategies they used to solve it.

You go out to watch the runners competing in the ING New York City Marathon. There are a lot of people running in strange costumes! One participant is quite unique and for every mile she runs forward, she turns around and runs the next .75 miles backwards (have you ever run backwards? Its hard!) Of the 26 miles in the marathon, how many miles will she run forwards? How many miles will she run backwards?

→ 15 miles forward and 11 miles backwards

Show your work:

$1 + .75 = 1.75$ miles covered in each round of running forward and backward

$$1.75 \times 26 \rightarrow x = 14.8$$

so she completes 14 full rounds of running forward and backward during the marathon

$$1.75 \times 14 = 24.5$$

$$24.5 + 1 \text{ more mile forward} = 25.5 + .5 \text{ miles backwards to get to } 26$$

$$\text{So } 1 \times 14 = 14 + 1 = 15 \text{ forward miles}$$

$$\text{And } .75 \times 14 = 10.5 + .5 = 11 \text{ miles forward}$$

$$\text{Check: } 15 + 11 = 26$$

Lesson: Find the Marathons

Grades: 5-6

Skills: Mapping, research

Time: 30 minutes

What to do:

Distribute the student worksheet on the following page. Have students use an atlas or the internet to find out which states these marathons are held in. Tell them to write the number of the marathon on the map in the appropriate state.

- | | |
|-------------------------------|-------------------------------|
| 1. Boston Marathon | 6. ING New York City Marathon |
| 2. Walt Disney World Marathon | 7. Houston Marathon |
| 3. Los Angeles Marathon | 8. Portland Marathon |
| 4. Chicago Marathon | 9. Las Vegas Marathon |
| 5. Omaha Marathon | 10. Philadelphia Marathon |



Name: _____

Find the Marathons Worksheet

Find the states in which the following marathons are run, and write the number for the marathon in the correct state on the map.

- | | |
|-------------------------------|-------------------------------------|
| 1. Boston Marathon | 6. ING New York City Marathon |
| 2. Walt Disney World Marathon | 7. Houston Marathon |
| 3. Los Angeles Marathon | 8. Portland Marathon |
| 4. Chicago Marathon | 9. Las Vegas International Marathon |
| 5. Omaha Marathon | 10. Philadelphia Marathon |



Lesson: Google Map Pedometer
Grades: 5-6
Skills: Technology, math, mapping
Time: 1 hour

What to do:

The distance calculator on the Google map pedometer enables you to compute the mileage between two or more points by clicking on the "recording button" and then on the points of the map. You can see distances between states, or zoom in and get distances around your hometown. You can click as many times as you like to add legs to your trip! Here's the address:

www.gmap-pedometer.com

Ask students to look at the map and choose three locations that you believe are 26 miles from your neighborhood. Write them in the table below:

Location	Estimated # of Miles Away
1.	26 miles
2.	26 miles
3.	26 miles

Use the pedometer to find the real distance and write it in the table.

Location	Actual # of Miles Away
1.	
2.	
3.	

Extension:

Do similar estimations for locations you think are 100 miles away.

Lesson: ING New York City Marathon Challenges

Grades: 4-6

Skills: Problem solving

Time: 25 minutes

What to do:

Read the following problems to students. Ask them to share their strategies after they have completed them.

Problem 1:

In 2005, there were 12,206 female finishers, and 25,051 male finishers at the ING New York City Marathon. How many runners finished the marathon in total?

→ 37,257

Problem 2:

The youngest runner to finish the ING NYC Marathon in 2005 was 18 years old, and the oldest was 85 years old, what was the difference in age between the oldest and the youngest runners?

→ 67 years

Problem 3:

The winner of the 2004 ING NYC Marathon, Hendrik Ramaala ran it in just 2 hours and 9 minutes. The last runner (to be officially timed), 70 year old Carl Hilker, ran the marathon in 9 hours 59 minutes. What was the difference in Hendrik and Carl's times?

→ 7 hours 50 minutes

Challenge:

If a runner in the marathon travels three feet for every step, how many steps will they have to take to complete the whole marathon? (There are 5280 feet in a mile.) Don't forget the 385 yards after the 26th mile!!

→ 46,145

Lesson: Jamboree Math
Grades: 4-6
Skills: Problem solving, number sense
Time: 30 minutes

What to do:

Read the statistics about the NYRRF jamborees in the box below. Then have students answer questions below.

Total statistics for NYRRF Jamborees in 2006		
4000 runners	1200 parents	120 race officials
8000 ribbons	75 NYRRF staff	64 buses
40 volunteers		

Problem 1:

There were 4 New York Road Runner Foundation jamborees last year. About how many runners participated in each jamboree?

→ $4000 \div 4 = 1000$

Problem 2:

How many ribbons did each runner earn?

→ $8000 \div 4000 = 2$

Problem 3:

How many runners were there for every NYRRF staff member that worked the jamborees?

→ $4000 \div 75 = 53.3$

Challenge:

If all the runners and race officials came by bus, and each bus held 50 people, how many busses would be needed?

→ $4120 \div 50 = 82.4$, so 83 busses in all

Lesson: Marathon Math Fill-in
Grades: Level: 4-6
Skills: Problem solving, number sense
Time: 20 minutes

What to do:

Distribute a blank copy of the following paragraph (see next page) to students. Ask them to fill in the blank spaces with the numbers in the box for the paragraph to make sense. When completed, have students share the strategies they used.

Answers:

In the year 1976, when he was just 14 years old, Sam ran a 1/2 marathon, which is 13.1 miles. The following year he ran the full marathon, which is 26.2 miles! Sam won a prize of 400 dollars, and 40 cents! He gave 1/4 of his winnings to charity, in other words he gave 100 dollars and 10 cents to charity. Since 1989, Sam has participated in and finished 11 marathons, which is equivalent to 288.2 miles of running!

Name: _____

Marathon Math Fill-in Worksheet

Use the numbers in the box below to complete this paragraph so that it makes sense.

In the year _____, when he was just 14 years old, Sam ran a _____ marathon, which is _____ miles. The following year he ran the full marathon, which is _____ miles! Sam won a prize of _____ dollars, and _____ cents! He gave _____ of his winnings to charity, in other words he gave _____ and _____ cents to charity. Since 1989, Sam has participated in and finished _____ marathons, which is equivalent to _____ miles of running!

- 13.1
- 100
- 11
- 400
- 40
- 1/2
- 1976
- 10
- 288.2
- 26.2
- 1/4

Lesson: Marathon Miles Math
Grades: 5-6
Skills: Problem solving, number sense
Time: 30 minutes

What to do:

Ask students to solve the following problems and then have them share their strategies. Extend the problems using your students' actual mileage to create challenges for enrichment.

Problem 1:

A student has earned her third marathon medal. How many miles has she run since she earned her first marathon medal?

→ 52.4 miles

Problem 2:

How many more miles would she have to run to be halfway from where she is now to her 4th marathon of miles?

→ 13.1 more miles

Problem 3:

If 12 students complete 4 marathon's of miles, how many miles have they completed altogether?

→ 1,257.6 miles

Lesson: Marathon Number Sense Game

Grades: 4-6

Skills: Number sense, strategy

Time: 20 minutes

What you need:

Two dice, 2 game pieces

How to Play:

Each player's goal is to get **EXACTLY** to the number 26 on the chart.

Both players will start with their game piece on the number 1. The players will take turns rolling two dice. The numbers on the dice may be added, subtracted, multiplied, or divided. Once an answer is found, the player can move their game piece either forward or back that many spaces to try to get to 26.

For example, if a 3 and a 2 are rolled, the player can go forward or back 5 if you add the numbers, forward or back 6 if you multiply the numbers, or forward or back 1 if you subtract the numbers.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

91	92	93	94	95	96	97	98	99	100
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Lesson: Marathon Time Math
Grades: 4-6
Skills: Problem solving, time
Time: 30 minutes

What to do:

Read the problems to the students. When they are finished, have them share the strategies they used to solve them.

Problem 1:

If the winner of the ING New York City Marathon finished in 2:09:00, and each runner after him finished exactly 15 seconds apart, what was the time of the 9th runner that crossed the finish line?

→ 2:11:00

Problem 2:

If the winner of the ING New York City Marathon finished in 2:09:00, and each runner after him finished exactly 23 seconds apart, what was the time of the 9th runner that crossed the finish line?

→ 2:12:04

Challenge:

If the winner of the ING New York City Marathon finished in 2:09:43, and each runner after him finished exactly 37 seconds apart, what was the time of the 15th runner that crossed the finish line?

→ 2:18:21

Lesson: **Stride Length**
Grades: 4-6
Skills: Problem solving, time
Time: 1 hour

What to do:

Ask students if they think they can walk across the classroom in ten strides. Have a few of them try it. Note that activity 1 is used to demonstrate that different people take strides of different lengths.

Activity 1:

Have students all start from the same line and take ten normal sized walking strides. Discuss differences in distance traveled by each student.

Repeat activity with 20 strides. Are the same people still "ahead" of others?

Activity 2:

1. Measure out a long length in your school - a hallway, the gym, etc. - with a tape measure or measuring wheel to get the length in feet.

2. Have each student begin at the starting mark and walk naturally to the end, counting the number of strides they take. Record the number of strides.

3. Repeat Step 2, this time running instead of walking. Again, record the number of strides.

4. Tell students to figure out how many feet they travel with each one of their own strides both walking and running.

5. Have students use their stride data to figure out how many strides it would it take them to travel one mile walking? Running? (5,280 feet = 1 mile)

Challenge:

How many strides would it take you to run a marathon?

(First students need to figure out how many feet in a marathon.

1 marathon = 26 miles 385 yards = 138,435 feet)

Lesson: Three Types of Subtraction
Grades: 3-6
Skills: Problem solving, number sense
Time: 30 minutes

What to do:

Copy the data from the table below onto the board. Discuss with the students that subtraction can be used to solve different types of problems. There are three general types of subtraction problems listed below. Ask students to solve them and then discuss the strategies they used to find their answers.

2005 ING New York City Marathon Statistics	
Men Starters	25,279
Men Finishers	24,794
Women Starters	12,318
Women Finishers	12,062

Find the difference:

How many men started but did not finish the 2005 ING New York City Marathon?

→ 485 men

How many women started but did not finish the 2005 ING New York City Marathon?

→ 256 women

How many more men finished the ING New York City Marathon than women in 2005?

→ 12,732 more men finished than women

How many more do you need?

If every women finisher needs 2 cups of water, and there are 24,000 cups of water, how many more cups of water do they need?

→ 124 more cups

How many are left?

If there were 40,000 cups of water available before the race, and each starter drank one cup, how many cups of water are left?

→ 2,403 cups of water are left

Lesson: Training Schedule Problem
Grades: 5-6
Skills: Problem solving, number sense
Time: 20 minutes

What to do:

Read the paragraph to students and have them write down the information as in the box below. Discuss how making a grid can help them solve the problem. Then read the clues and have them solve the problem using the grid they created.

Courtney, Doug, and Nancy train at the track every day. They each run on a different schedule though. One of them trains at 2:00, one of them trains at 4:00 and one of them trains at 8:00. Find out when each runner trains.

1. Courtney trains at either 4:00 or 8:00
2. Doug does not train at 4:00
3. Nancy does not train at 8:00
4. Doug trains two hours before Nancy

Answers:

	2:00	4:00	8:00
DOUG	√	x	x
COURTNEY	x	x	√
NANCY	x	√	x