



# Sports as a Teachable Moment



Updated and includes the  
2018 Olympic Games.

# Sports as a Teachable Moment

## Olympic Medal Standing Analysis Form

The scores below were recorded at the **2010 Winter Olympics in Vancouver** and at the **2014 Winter Olympics in Sochi**. Six countries have been selected and entered on the table. Four empty spaces remain available for you to fill in.

- If you wish, use the internet and collect more data.
  - Find the **total number of medals won by each country** and then **rank-order** the totals.
  - Try repeating this activity using a **weighted method**, in which:
    - one **gold medal** is worth three points,
    - one **silver medal** is worth two points, and
    - one **bronze medal** is worth one point.
- Rank-order** the values of the medals won.



2010 Winter Olympics in Vancouver

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	4	6	6				
Canada	14	7	5				
Germany	10	14	7				
Norway	9	8	6				
Russia	3	5	7				
United States	9	15	13				

2014 Winter Olympics in Sochi

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	4	8	5				
Canada	10	10	5				
Germany	8	6	5				
Norway	11	5	10				
Russia	9	3	8				
United States	9	7	12				

Compare the performances of different countries on a circle graph.

Draw a double bar graph comparing all countries' results.



## CANADA'S Historical Records

Sport	Gold	Silver	Bronze	Total
Alpine Skiing	4	1	6	
Biatlon	2	0	1	
Bobsleigh	4	2	1	
Cross-Country Skiing	2	1	0	
Curling	5	3	2	
Figure Skating	4	11	10	
Freestyle Skiing	8	7	3	
Ice Hockey	13	5	2	
Short Track Speed Skating	8	11	9	
Skeleton	2	1	1	
Snowboarding	3	2	2	
Speed Skating	8	12	15	
Including the 2014 Sochi Winter Olympics – Canada has never won a medal in the following sports:				
Luge	0	0	0	
Nordic Combined	0	0	0	
Ski Jumping	0	0	0	
<b>Medal Totals</b>				

### SUGGESTED ACTIVITIES:

Construct a **bar graph** that demonstrates Canada's **gold medal** record for each sport.

Construct a **triple bar graph** showing Canada's record for **all medals** in each sport.

Choose any sport that interests you and create a **circle graph** showing data related to that sport.

Create **math questions** related to the data shown in the table.



The imaginative mathematics teacher will find many opportune 'teachable moments' in studies of local and worldwide sports. Using the **Winter Olympics** as a springboard for mathematical instruction presents learning with meaningful, real-life concepts.

## Women's Speed Skating – 500m



Canada has sent participants in Speed Skating to every Winter Olympics 1924 through 2014. The only other countries to have participated in speed skating events for All these 22 Winter Olympics (1924 through 2014) are Norway and the United States.

Year [Venue]	Country (athlete)	Medals – Times in Seconds		
		Gold	Silver	Bronze
2002 [Salt Lake City]	Canada (Catriona Le May Doan)	74.75		
	Germany (Monique Garbrecht-Enfeldt)		74.94	
	Germany (Sabine Völker)			75.19
2006 [Turin]	Russia (Svetlana Zhurova)	76.57		
	China (Wang Manli)		76.78	
	China (Ren Hui)			76.87
2010 [Vancouver]	South Korea (Lee Sang-hwa)	76.09		
	Germany (Denny Wolf)		76.14	
	China (Wang Beixing)			76.63
2014 [Sochi]	South Korea (Lee Sang-hwa)	74.70*		
	Russia (disqualified)		75.06	
	Netherlands (Margot Boer)			75.48
2018 [PyeongChang]				

In the **2002 Salt Lake City Olympics** this event changed from one race of 500 metres to the accumulated time for two 500-metre races.

\*Broke the previous Olympic Record held by Catriona Le May Doan 74.75 (Canada) in 2002 Salt Lake City Olympics.

Enter the data for the **2018 PyeongChang Olympics**.

Find the **average** for all the times shown in this table for **Germany**. Do the same for **China**.

What is the **difference** between the **fastest** time and the **slowest** time on this table?

Which country has the **best average**? By how much?

Create **math questions** or **number stories** based on the data shown in this table.

## Snowboarding - introduced at the 1998 Nagano Winter Olympics

The massive air time and amazing tricks makes snowboarding a crowd favorite at the Winter Olympics. This sport combines the body style of surfing with the acrobatics of skateboarding. It has spread throughout the world and is quickly becoming one of the most popular events of the Winter Olympics.



In 1998 there were 8 events (4 for men and 4 for women) and in 2018 there will be 20 events (10 for men and 10 for women). A maximum of 258 athletes can compete. No nation can have more than 26 snowboarders. In 2018 PyeongChang only the United States will have the maximum of 26; Switzerland will have 25 and Canada 20.

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	1	1	4				
Australia	1	1	0				
Canada	3	2	2				
Czech Republic	1	0	0				
Finland	0	2	1				
France	3	3	4				
Germany	1	3	1				
Great Britain	0	0	1				
Italy	0	1	1				
Japan	0	2	1				
Netherlands	1	0	0				
Norway	0	3	1				
Russia	2	2	1				
Slovakia	0	1	0				
Slovenia	0	1	1				
Sweden	0	1	0				
Switzerland	7	2	3				
United States	10	5	9				

- Find the **total number of medals** won by each country and then **rank-order** the totals.
  - Try repeating this activity using a **weighted method**, in which:
    - one **gold medal** is worth three points,
    - one **silver medal** is worth two points, and
    - one **bronze medal** is worth one point.
- Rank-order** the values of the medals won.



# Sports as a Teachable Moment

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The North American sports culture pervades many aspects of our daily lives. Newspapers print lengthy daily sports reports, and some television stations are devoted exclusively to sports reporting. During an Olympic year, sports events are featured around the clock on most television stations and even very young children are keenly aware that something important is happening in the world about them. The National Hockey League playoffs, the NBA playoffs, World Cup soccer and the World Series dominate discussion and viewing habits in many households. During major sports or playoff events, adults in households across North America demonstrate intense interest and emotional commitment to the sports events unfolding on television screens before them. Young children watching are quick to learn, in both subtle and overt ways, that competitive sports appear to provide adults with enduring interest and entertainment. **The imaginative mathematics teacher may find many opportune 'teachable moments' in studies of local and worldwide sports events. Using sports as a springboard for mathematics instruction presents learning within meaningful, real-life contexts.**

Many children are more than spectators of sports events: they are active participants in sports. Some children engage in sports activities independently, while others play sports under parental direction, or even, in some cases, under parental pressure. Some children engage in competitive sports when encouraged by teachers or parents to join house leagues or after-school teams.

Other children prefer to watch the athletic activities of their peers. Still other children watch sports because the pervasive and powerful sports culture about them inevitably persuades them that sports events are important and significant. And for those adults or children who have little or no interest in sports, some knowledge of major sports events often proves useful in daily conversational interactions.

**A focus on sports is, indeed, a useful tool in the hands of the imaginative mathematics teacher.**

**NOTE:**

Although the exercises in this Sports section refer specifically to Olympic records, meaningful mathematical connections may also be made to physical education classes or to co-curricular and extra-curricular sports activities within the school.



# Winter Olympics – Analysis

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Create equations or number stories based on the data shown in the tables.

For example, create equations that answer the following questions:

- How many *more* or *less* medals did Canada win than the United States in the year 2002?
- Study the Winter Olympic standing for one country. Compare the findings using words like *difference*, *ratio* or *fraction*.
- How many *more* or *less* medals did Canada win than the United States in the year 1998?
- How many *more* or *less* medals did Canada win in 2006 than in 1994?
- Canada won 19 gold medals in three Winter Olympics (1998, 2002 and 2006).  
Canada won 6 in 1998 and 6 in 2002. How many gold medals did Canada win in 2006?  
What percentage of its total medals, over the three Olympics listed, did Canada win during each of these Olympic years?

## Suggestions for the Winter Olympics Unit

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**Thoroughly examine** the entire Winter Olympics Unit before you select the specific skills you wish to emphasize with your students. **Select the activity sheets** you wish to use and the specific questions you plan to assign. Establish an evaluative format in which you permit students to determine some of the essential assessment criteria employed.

Be sure to **include open-ended activities** that encourage students to select their own sports topics and to generate their own statistical data. Remember that **choice is a powerful motivator in the learning situation**, and students who have some control over their own learning are invariably more committed to that learning process.

**Focus upon the major objectives of the unit**, which teach students to:

- Employ a variety of graphing formats when displaying their data.
- Interpret and analyze the graphing data of their peers.

# Teaching Notes for the Winter Olympics

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Teachers will encounter numerous opportunities to create engaging and challenging word problems when studying sports and the Olympics. **Always present word problems using correct mathematical terminology**, either when finding the **sum** (total, altogether) or when finding the **difference** (how many *more* or *less*, *compare*, or find the *difference*).

Always encourage students to attempt addition of two-digit numbers mentally, using a horizontal format. Teach students to use concrete, visual representations of numbers or configurations. **Power of Ten** shapes or egg-carton ten frames often prove especially helpful for students with learning difficulties.

Encourage students to look for **'friendly' pairs** when adding ( $5 + 5$ ,  $6 + 4$ ,  $7 + 3$ ,  $8 + 2$ ,  $9 + 1$ ) This understanding may easily be extended to sums such as  $62 + 38$ ,  $73 + 27$ ,  $81 + 19$ , etc.

**When studying an Olympic or sports event that involves timing**, always note the different bases employed when calculating seconds, minutes or hours. For example, a record of **1:18.03** means **1** minute, **18** seconds and **3** hundredths of a second.



**Calculating differences when studying units of time may require regrouping.**

This activity, although challenging, is usually worthwhile. When students regroup decimals in calculations of time, they employ tenths or hundredths, but when they **regroup minutes to seconds they employ the base of 60**. This also holds true for calculations involving minutes and hours in long-distance or marathon races or in cross-country skiing events. As students work with regrouping in this context, be sure to relate this understanding to common, everyday base-ten regrouping employed in the regular subtraction operation. Students will no doubt view everyday subtraction and regrouping as remarkably easy after having regrouped with a base of 60.



**Where percentage is the focus of study**, it is advisable to use the format of the smaller unit when presenting numbers showing mixed units (such as minutes and seconds).

For example, when students compare the **1992** and **1994 Four Man Bobsledding**, times are as follows:

$$\mathbf{1994} \quad 3:27.78 \quad (3 \times 60) + 27.78 = 207.78 \text{ seconds}$$

$$\mathbf{1992} \quad 3:53.90 \quad (3 \times 60) + 53.90 = 233.90 \text{ seconds}$$

Improvement is  $233.90 - 207.78 = 26.12$  seconds.

Percentage improvement, shown on a calculator, is  $26.12 \div 233.9 = 0.1116716$ , or approximately 11%.

This **activity will provide opportunities to teach regrouping, fractions, subtraction, and rounding**. It is an activity that is inherently rich both in mathematical connections and meaningful contexts.

Students may also need to employ regrouping strategies when finding percentage differences between silver and gold-medal standings, or between fourth-place and bronze-medal standing.

**Circle graphs will prove most effective where the number of categories included in the graph is a factor of 360.** In this way, students can calculate the number of degrees for each category. This is a good opportunity to teach prime factorization ( $360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$ ). Demonstrate for students that when they are attempting to find the number of times that **18** divides into **360**, they should initially try covering the factors that yield **18**. (These factors are  $2 \times 3 \times 3$ .) They then find the product of the remaining factors ( $2 \times 2 \times 5$ ), which equals **20**. Thus, **18** will divide into **360** a total of **20** times. Circle graphs prove most effective when working with **3, 4, 6, 8, 9, 10** or **12** countries or categories. Numbers greater than **12** create an overcrowded graph. **Circle graph templates are available at the end of this unit.**

# Winter Olympics: [click on **each topic/event** to move directly to it]

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# Olympic Medal Standing Analysis Form

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- If you wish, use the internet and collect more data.
- Find the **total number of medals won by each country** and then **rank-order** the totals.
- Try repeating this activity using a **weighted method**, in which:
  - one **gold medal** is worth *three* points,
  - one **silver medal** is worth *two* points, and
  - one **bronze medal** is worth *one* point.**Rank-order the values** of the medals won.



## 2010 Winter Olympics in Vancouver

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	4	6	6				
Canada	14	7	5				
Germany	10	14	7				
Norway	9	8	6				
Russia	3	5	7				
United States	9	15	13				

## 2014 Winter Olympics in Sochi

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	4	8	5				
Canada	10	10	5				
Germany	8	6	5				
Norway	11	5	10				
Russia	9	3	8				
United States	9	7	12				

Compare the performances of different countries on a circle graph.

Draw a double-bar graph comparing all countries' results.

Create math questions and number stories based on the data shown in the tables.

# Olympic Medal Standing Analysis Form

The scores below were recorded at the **2014 Winter Olympics in Sochi**. Six countries have been selected and entered on the table. Four empty spaces remain available for you to fill in.

Fill in the results for the **2018 Winter Olympics in PyeongChang**.

- If you wish, use the internet and collect more data.
- Find the **total number of medals won by each country** and then **rank-order** the totals.
- Try repeating this activity using a **weighted method**, in which:
  - one **gold medal** is worth *three* points,
  - one **silver medal** is worth *two* points, and
  - one **bronze medal** is worth *one* point.



**Rank-order the values** of the medals won.

## 2014 Winter Olympics in Sochi

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	4	8	5				
Canada	10	10	5				
Germany	8	6	5				
Norway	11	5	10				
Russia	9	3	8				
United States	9	7	12				

## 2018 Winter Olympics in PyeongChang

Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria							
Canada							
Germany							
Norway							
Russia							
United States							

Compare the performances of different countries on a circle graph.

Draw a double-bar graph comparing all countries' results.

Create math questions and number stories based on the data shown in the tables.



# PARTICIPATION DATA

## Comparing Records

Wow .... this information is very interesting!



Women athletes could compete in only figure skating until 1948 when skiing was opened as a competitive sport for women.

There are only 3 events where both men and women compete – Figure Skating (mixed ice dancing and mixed pairs) and mixed doubles Luge.

In 1998 [Nagano] ice hockey and curling was opened to women.

Nordic Combined is the only sport for males only.

In 1960 [Squaw Valley] 20% were women.

In 2014 [Sochi] 40% were women.

Year [Venue]	Athletes Total	Number of Countries	Number of Sports	Number of Events
1928 [St. Moritz]	464	25	6	14
1932 [Lake Placid]	252	17	5	14
1936 [Garmisch-Partenkirchen]	668	28	6	17
1948 [St. Moritz]	606	28	7	22
1952 [Oslo]	694	30	6	22
1956 [Cortina d'Ampezzo]	820	32	6	24
1960 [Squaw Valley]	665	30	6	27
1964 [Innsbruck]	1091	36	8	34
1968 [Grenoble]	1158	37	8	35
1972 [Sapporo]	1006	35	8	35
1976 [Innsbruck]	1123	37	8	37
1980 [Lake Placid]	1072	37	8	38
1984 [Sarajevo]	1274	49	8	39
1988 [Calgary]	1423	57	8	46
1992 [Albertville]	1801	64	10	57
1994 [Lillehammer]	1737	67	10	61
1998 [Nagano]	2177	72	14	68
2002 [Salt Lake City]	2399	77	15	78
2006 [Turin]	2663	80	15	84
2010 [Vancouver]	2566	82	15	86
2014 [Sochi]	2780	88	15	98
2018 [PyeongChang]				

Complete the table by entering the data for the 2018 PyeongChang Olympics.

Create number-story problems based on the data above.



# CANADA'S

## Winter Olympic Records

Year [Venue]	Gold	Silver	Bronze	Total Medals
1924 [Chamonix]	1	0	0	
1928 [St. Moritz]	1	0	0	
1932 [Lake Placid]	1	1	5	
1936 [Garmisch-Partenkirchen]	0	1	0	
1948 [St. Moritz]	2	0	1	
1952 [Oslo]	1	0	1	
1956 [Cortina d'Ampezzo]	0	1	2	
1960 [Squaw Valley]	2	1	1	
1964 [Innsbruck]	1	1	1	
1968 [Grenoble]	1	1	1	
1972 [Sapporo]	0	1	0	
1976 [Innsbruck]	1	1	1	
1980 [Lake Placid]	0	1	1	
1984 [Sarajevo]	2	1	1	
1988 [Calgary]	0	2	3	
1992 [Albertville]	2	3	2	
1994 [Lillehammer]	3	6	2	
1998 [Nagano]	6	5	4	
2002 [Salt Lake City]	6	3	8	
2006 [Turin]	7	10	7	
2010 [Vancouver]	14	7	5	
2014 [Sochi]	10	10	5	
2018 [PyeongChang]				
<b>Medal Totals</b>				

### SUGGESTED ACTIVITIES:

Enter the data for the **2018** PyeongChang Olympics.

Construct a **bar graph** that demonstrates Canada's **gold medal** record.

Find the **total medals** won by Canada each year and construct a **line graph** to represent the results.

Select any Olympic year and create a **circle graph** showing data drawn from that year.

Find the **percentage difference** between the **gold medal** scores for **2006** and **2010**.

Find the **percentage difference** between the **silver medal** scores for **1988** and **2006**.



# CANADA'S Historical Records

Sport	Gold	Silver	Bronze	Total
Alpine Skiing	4	1	6	
Biathlon	2	0	1	
Bobsleigh	4	2	1	
Cross-Country Skiing	2	1	0	
Curling	5	3	2	
Figure Skating	4	11	10	
Freestyle Skiing	8	7	3	
Ice Hockey	13	5	2	
Short Track Speed Skating	8	11	9	
Skeleton	2	1	1	
Snowboarding	3	2	2	
Speed Skating	8	12	15	
Including the 2014 Sochi Winter Olympics – Canada has never won a medal in the following sports:				
Luge	0	0	0	
Nordic Combined	0	0	0	
Ski Jumping	0	0	0	
<b>Medal Totals</b>				

### SUGGESTED ACTIVITIES:

Construct a **bar graph** that demonstrates Canada's **gold medal** record for each sport.

Construct a **triple bar graph** showing Canada's record for **all medals in each sport**.

Choose any sport that interests you and create a **circle graph** showing data related to that sport.

Create **math questions** or **number stories** based on the data shown in this table.



# Medal Rankings – top 3 countries

Below are the **top three countries in the medal count** for the past four Winter Olympic Games.

2002 [Salt Lake City]

Ranking	Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals
1	Norway	13	5	7	
2	Germany	12	16	8	
3	United States	10	13	11	



2006 [Turin]

Ranking	Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals
1	Germany	11	12	6	
2	United States	9	9	7	
3	Canada	7	10	7	

Enter the data for the **2018 PyeongChang** Olympics.

Which country has the **most medals** over all these **5** Olympics combined?

2010 [Vancouver]

Ranking	Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals
1	Canada	14	7	5	
2	Germany	10	13	7	
3	United States	9	15	13	

Which country has the **most GOLD** medals over all these **5** Olympics combined?

2014 [Sochi]

Ranking	Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals
1	Norway	11	5	10	
2	Canada	10	10	5	
3	United States	7	7	12	

Which country has the **most SILVER** medals for all these **5** Olympics combined?

2018 [PyeongChang]

Ranking	Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals
1					
2					
3					

Which country has the **most BRONZE** medals over all these **5** Olympics combined?





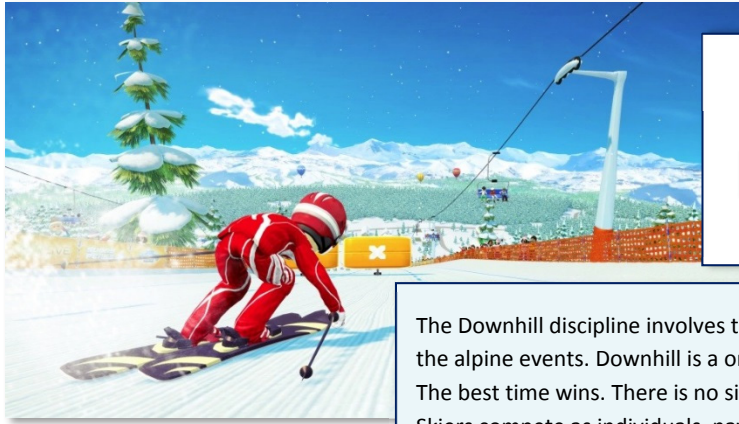
# Men's Downhill Skiing

Downhill skiing challenges the best skiers in a variety of ways: skiing at high speeds, through challenging turns, shallow dips, flats, and small airs (jumps). Racers on a typical international-level course exceed speeds of 130 km/h and speeds of up to 150 km/h in certain sections are common.

## Gold Medal

Year [Venue]	Athlete	Country	Time (minutes & seconds)
1948 [St. Moritz]	Henri Oreiller	France	2:55.0
1952 [Oslo]	Zeno Colo	Italy	2:30.8
1956 [Cortina d'Ampezzo]	Anton Sailer	Austria	2:52.2
1960 [Squaw Valley]	Jean Vuarnet	France	2:06.0
1964 [Innsbruck]	Egon Zimmermann	Austria	2:18.16
1968 [Grenoble]	Jean-Claude Killy	France	1:59.85
1972 [Sapporo]	Bernhard Russi	Switzerland	1:51.43
1976 [Innsbruck]	Franz Klammer	Austria	1:45.73
1980 [Lake Placid]	Leonhard Stock	Austria	1:45.50
1984 [Sarajevo]	William Johnson	United States	1:45.59
1988 [Calgary]	Pirmin Zurbriggen	Switzerland	1:59.63
1992 [Albertville]	Patrick Ortlieb	Austria	1:50.37
1994 [Lillehammer]	Thomas Moe	United States	1:45.75
1998 [Nagano]	Jean-Lu Cretier	France	1:50.11
2002 [Salt Lake City]	Fritz Strobl	Austria	1:39.13
2006 [Turin]	Antoine Deneriaz	France	1:48.80
2010 [Vancouver]	Didier Defago	Switzerland	1:54.31
2014 [Sochi]	Matthias Mayer	Austria	2:06.23
2018 [PyeongChang]			

## Comparing Records



# Women's Downhill Skiing

## Gold Medal

The Downhill discipline involves the highest speeds and therefore the greatest risks of all the alpine events. Downhill is a one-run race with the longest course and fastest speeds. The best time wins. There is no side-by-side competition, no judges and no style points. Skiers compete as individuals, navigating their way down snow on a mountainside one by one in a race against the clock.

Year [Venue]	Athlete	Country	Time (minutes & seconds)
1948 [St. Moritz]	Hedy Schlunegger	Switzerland	2:28.3
1952 [Oslo]	Trude Beiser-Jochum	Austria	1:47.1
1956 [Cortina d'Ampezzo]	Madeleine Berthod	Switzerland	1:40.7
1960 [Squaw Valley]	Heidi Beibl	Germany	1:37.6
1964 [Innsbruck]	Christl Haas	Austria	1:55.39
1968 [Grenoble]	Olga Pall	Austria	1:40.87
1972 [Sapporo]	Marie-Theres Nadig	Switzerland	1:36.68
1976 [Innsbruck]	Rosi Mittermaier	West Germany	1:46.16
1980 [Lake Placid]	Annemarie Moser-Proll	Austria	1:37.52
1984 [Sarajevo]	Michaela Figini	Switzerland	1:13.36
1988 [Calgary]	Marina Kiehl	West Germany	1:25.86
1992 [Albertville]	Kerrin Lee-Gartner	Canada	1:52.55
1994 [Lillehammer]	Katja Seizinger	Germany	1:35.93
1998 [Nagano]	Katja Seizinger	Germany	1:28.89
2002 [Salt Lake City]	Carole Montillet-Carles	France	1:39.56
2006 [Turin]	Michaela Dorfmeister	Austria	1:56.49
2010 [Vancouver]	Lindsey Vonn	United States	1:44.19
2014 [Sochi]	Tina Maze	Slovenia	1:41.57
2018 [PyeongChang]			

## Comparing Records







# Men's Giant Slalom Skiing

**Giant slalom (GS)** is an alpine skiing discipline. Slalom is a two-run event – the course is different for each run – with the shortest length of any race and the quickest turns; skiers navigate at least 50 gates. **Giant slalom** is also a two-run event and is similar to slalom, but there are fewer gates, spaced farther apart.

Year [Venue]	Gold	Time (minutes & seconds)	Silver	Time (minutes & seconds)	Bronze	Time (minutes & seconds)
1980 [Lake Placid]	Sweden	2:40.74	Liechtenstein	2:41.49	Austria	2:42.51
1984 [Sarajevo]	Switzerland	2:41.18	Yugoslavia	2:41.41	Liechtenstein	2:41.75
1988 [Calgary]	Italy	2:06.37	Austria	2:07.41	Switzerland	2:08.39
1992 [Albertville]	Italy	2:06.98	Luxembourg	2:07.30	Norway	2:07.82
1994 [Lillehammer]	Germany	2:52.46	Switzerland	2:52.48	Austria	2:52.58
1998 [Nagano]	Austria	2:38.51	Austria	2:39.36	Switzerland	2:39.69
2002 [Salt Lake City]	Austria	2:23.28	United States	2:24.16	Norway	2:24.32
2006 [Turin]	Austria	2:35.00	France	2:35.07	Austria	2:35.16
2010 [Vancouver]	Switzerland	2:37.83	Norway	2:38.22	Norway	2:38.44
2014 [Sochi]	United States	2:45.29	France	2:45.77	France	2:45.93
2018 [PyeongChang]						

- **Complete the table** for the **2018** PyeongChang Winter Olympics.
- **Total the medals** won by each country and rank order the results. Draw a bar graph to represent the data. Which country has the most medals?
- Repeat this activity using a **weighted method**, in which:
  - **gold** medals are worth **3** points
  - **silver** medals are worth **2** points
  - **bronze** medals are worth **1** point.

Draw a bar graph to represent the data. Compare the two bar graphs.

- What is the difference between the *fastest* time and the *slowest* time shown on the table?
- How much *faster* was the **gold** medal winner in the **2014 Sochi** Winter Olympics than the **gold** medal winner in the **1988 Calgary** Winter Olympics?
- Find the *average time* for all the medal winners from each country? Which country has the *fastest average time*? Which country the *slowest average time*?

# Women's Giant Slalom



Year [Venue]	Athlete	Country	Time (minutes & seconds)
1952 [Oslo]	Andrea Mead Lawrence	United States	2:06.80
1956 [Cortina d'Ampezzo]	Ossi Reichert	Germany	1:56.50
1960 [Squaw Valley]	Yvonne Ruegg	Switzerland	1:39.90
1964 [Innsbruck]	Marielle Goitschel	France	1:52.24
1968 [Grenoble]	Nancy Greene	Canada	1:51.97
1972 [Sapporo]	Marie-Theres Nadig	Switzerland	1:29.90
1976 [Innsbruck]	Kathy Kreiner	Canada	1:29.13
1980 [Lake Placid]	Hanni Wenzel	Liechtenstein	2:41.66*
1984 [Sarajevo]	Debbie Armstrong	United States	2:20.98
1988 [Calgary]	Vreni Schneider	Switzerland	2:04.49
1992 [Albertville]	Pernilla Wiberg	Sweden	2:12.74
1994 [Lillehammer]	Deborah Compagnoni	Italy	2:30.97
1998 [Nagano]	Deborah Compagnoni	Italy	2:50.59
2002 [Salt Lake City]	Janica Kostelic	Croatia	2:30.01
2006 [Turin]	Julia Mancusco	United States	2:30.01
2010 [Vancouver]	Viktoria Rebensburg	Germany	2:27.11
2014 [Sochi]	Tina Maze	Slovenia	2:36.87
2018 [Pyeongchang]			

\*Note the sudden increase in time we see recorded here (after the 1976 Innsbruck Winter Olympics). 1980 was the first Olympics in which the Women's Giant Slalom consisted of the combined time for two runs, rather than one.

GOLD MEDAL



# Bobsleigh and the Winter Olympics



Hmmm ... very interesting info!



**Bobsled** – (or **Bobsleigh** as it's referred to everywhere outside of North America) is an event in the Winter Olympics where a two- or four-person team drives a specially designed sled down an ice track. A modern track should be **1,200 to 1,400** metres long and have at least fifteen curves. Speeds may exceed **150 km/h**. The current world record speed, however, is **201 km/h**.

- **Men's four-man bobsleigh** appeared in the first Winter Games in 1924, and men's **two-man bobsleigh** event was added in the 1932 Lake Placid Winter Olympics. Women first competed in the **two-woman bobsleigh** event in the 2002 Salt Lake City Winter Olympics.
- **Speed is the name of the game.** Each crew will get four runs down the course and their times will be added up. The team with the **fastest aggregate time wins the gold medal.** This means if one person is a little slow jumping into the sled, if one person slips a little on the ice or doesn't get a good grip on the push-bar, or if the driver makes a tiny little mistake going around a single corner, that mistake could be hard to make up on the other runs.
- In a sport where **only one-hundredth of a second separates teams in the standings**, everything needs to happen smoothly and quickly.
- **Bobsleds are basically sliding snow cars.** The crew—composed of a driver, brakeman, and two additional members (in four-man)—go on a mad dash to launch their sled as fast as they can down the track. Once they get going, **bobsleds are the fastest of the Olympic sledding events** which take place on ice-covered runs that drop the sleds several hundred feet with huge banking turns that the sleds must navigate at progressively higher speeds.
- The **g-forces** felt inside the bobsled are supposedly **comparable to those experienced in a fighter jet.**
- The sled is heavy. **The heavier the sled, the faster it'll rumble down the course.** A four-person bobsled with its crew can legally weigh up to **630** kilograms. A two-man sled can weigh up to **390** kilograms while a women's sled can weigh up to **325** kilograms. **It starts at a stand-still. It's gotta get going!** As a result, bobsledders are built like combination sprinters/weight-lifters.
- **Why a four-man bobsled but not a four-woman sled?** Women are lobbying for a four-woman bobsled event, but no results so far. Bobsled is the only one of the three sledding events (luge, skeleton, bobsled) that is exclusively a team sport, with two- and four-man teams – no individuals compete.
- **Countries are permitted to send up to three qualified crews, with host country South Korea automatically allowed to send at least one crew.**

# Bobsleigh Medal Results

Bobsleds are designed to hold either two or four people. The race begins with the sled at a standstill and the racers beside it. At the count of three the racers sprint forward, propelling their sled by pushing thin metal rods that extend from the sides. Their goal is to get the sled up to speed as quickly as possible and then jump in and duck down.

Most races are won or lost by who gets the best start. After the riders are into the sled, the trick is to steer as minimally as possible because every adjustment slows the sled just a tiny amount. All the events consist of four runs and **the winner has the lowest cumulative time from all four runs.**



**Medal totals in Bobsleigh Winter Olympics – including 2014 in Sochi**

Country	Gold	Silver	Bronze	Total Medals
Austria	1	2	0	
Belgium	0	1	1	
Canada	4	2	1	
France	0	0	1	
Germany	16	13	11	
Great Britain	1	1	2	
Italy	4	4	4	
Romania	0	0	1	
Russia	0	1	1	
Soviet Union	1	0	2	
Switzerland	9	11	11	
United States	7	6	7	
<b>Medal Totals</b>				

## SUGGESTED ACTIVITIES:

**Total** the medals won by each country.

Obviously, Germany is the medal leader.

How do the other countries rank after Germany?

Research when Switzerland won its last gold medal in the Bobsleigh events. (You might be surprised.)

**Research and make a graph** of the Olympic years when Canada won its Bobsleigh medals.

**Complete the data** for the 2018 PyeongChang Olympics. **Create math questions and number stories** based on the data for this table.

Venue	Event	Gold Medal	Silver Medal	Bronze Medal
2010 (Vancouver)	Four-Man Bobsleigh	USA 3:24.46	Germany 3:24.84	Canada 3:24.85
2014 (Sochi)	Two-Woman Bobsleigh	Canada 3:50.61	USA 3:50.71	USA 3:51.61
2018 (PyeongChang)				

# Two-Man Bobsleigh

**Bobsleigh** (or bobsled) is a winter sport in which teams of two (or four) make timed runs down narrow, twisting, banked, iced tracks in a gravity-powered sled. The name of the sport appeared when competitors adopted the technique of bobbing back and forth inside the sled to increase its speed.



Year [Venue]	Gold	Time (minutes & seconds)	Silver	Time (minutes & seconds)	Bronze	Time (minutes & seconds)
1972 [Sapporo]	West Germany	4:57.07	West Germany	4:58.84	Switzerland	4:59.33
1976 [Innsbruck]	East Germany	3:44.42	West Germany	3:44.99	Switzerland	3:45.70
1980 [Lake Placid]	Switzerland	4:90.36	East Germany	4:10.93	East Germany	4:11.08
1984 [Sarajevo]	East Germany	3:25.56	East Germany	3:26.04	Soviet Union	3:26.16
1988 [Calgary]	Soviet Union	3:53.48	East Germany	3:54.19	East Germany	3:54.64
1992 [Albertville]	Switzerland	4:03.26	Germany	4:03.55	Germany	4:03.63
1994 [Lillehammer]	Switzerland	3:30.81	Switzerland	3:30.86	Italy	3:31.01
1998 [Nagano]	Italy	3:37.24	Canada	3:37.24	Germany	3:37.89
2002 [Salt Lake City]	Germany	3:10.11	Switzerland	3:10.20	Switzerland	3:10.62
2006 [Turin]	Germany	3:43.59	Canada	3:43.59	Switzerland	3:43.73
2010 [Vancouver]	Germany	3:26.65	Germany	3:26.87	Russia	3:27.51
2014 [Sochi]	Vacant – Russia won but was disqualified		Switzerland	3:46.05	USA	3:46.27
2018 [PyeongChang]						

- **Complete the table** for the 2018 PyeongChang Winter Olympics.
- **Total the medals** won by each country and rank order the results. Draw a bar graph to represent the data.
- Repeat this activity using a **weighted method**, in which:
  - **gold** medals are worth **3** points
  - **silver** medals are worth **2** points
  - **bronze** medals are worth **1** point.

Draw a bar graph to represent the data. Compare the two bar graphs.

- What is the **difference** between the **fastest** time and the **slowest** time shown on the table?
- What is the **difference** between the **fastest** time and the **slowest** time for the **gold** medal winners? For the **silver** medal winners? For the **bronze** medal winners?
- Find the **average time** for **all** the medal winners from **Switzerland**.
- The sledding tracks vary in length and degree of difficulty. By analyzing the recorded times **which three Olympics** had the **fastest tracks**? Which three Olympics had the **slowest tracks**?

# Two-Woman Bobsleigh



**Bobsleigh** (or bobsled) is an Olympic sport in which men have competed since 1924. Women first competed in the 2002 Salt Lake City Olympics in a two-woman bobsleigh event. Although there is lobbying for a four-woman bobsleigh event, this has still not been added to the Winter Olympics schedule.

Year [Venue]	Gold	Time (minutes & seconds)	Silver	Time (minutes & seconds)	Bronze	Time (minutes & seconds)
2002 [Salt Lake City]*	USA	1:37.76	Germany	1:38.06	Germany	1:38.29
2006 [Turin]	Germany	3:49.98	USA	3:50.69	Italy	3:51.01
2010 [Vancouver]	Canada	3:22.28	Canada	3:33.13	USA	3:33.40
2014 [Sochi]	Canada	3:50.61	USA	3:50.71	USA	3:51.61
2018 [PyeongChang]						

\*Note: In 2002 [Salt Lake City] the 'time' is the total for 2 races.  
Since then the event time is the total for 4 races.

- **Complete the table** for the 2018 PyeongChang Winter Olympics.
- **Total the medals** won by each country and rank order the results.  
Draw a bar graph to represent the data.
- Repeat this activity using a **weighted method**, in which:
  - **gold** medals are worth **3** points
  - **silver** medals are worth **2** points
  - **bronze** medals are worth **1** point.
 Draw a bar graph to represent the data. Compare the two bar graphs.
- Find the **average time** for **all** the medal winners from **Canada**.
- In 2014 [Sochi] what is the **difference** between the **gold medal time** and the **bronze medal time**?





# Four-Man Bobsleigh Gold Medals

Year [Venue]	Team	Country	Time (minutes & seconds)
1924 [Chamonix]	Switzerland One	Switzerland	5:45.54
1928 [St. Moritz]	United States Two	United States	3:20.50
1932 [Lake Placid]	United States One	United States	7:53.68
1936 [Garmisch-Partenkirchen]	Switzerland Two	Switzerland	5:19.85
1948 [St. Moritz]	United States Two	United States	5:20.10
1952 [Oslo]	West Germany	West Germany	5:07.84
1956 [Cortina d'Ampezzo]	Switzerland One	Switzerland	5:10.44
1960 Squaw Valley	<i>no record as no track was built for this event</i>		
1964 [Innsbruck]	Canada One	Canada	4:14.46
1968 [Grenoble]	Italy One	Italy	2:17.39
1972 [Sapporo]	Switzerland One	Switzerland	4:43.07
1976 [Innsbruck]	East Germany One	East Germany	3:40.43
1980 [Lake Placid]	East Germany One	East Germany	3:59.92
1984 [Sarajevo]	East Germany One	East Germany	3:20.22
1988 [Calgary]	Switzerland One	Switzerland	3:47.51
1992 [Albertville]	Austria One	Austria	3:53.90
1994 [Lillehammer]	Germany Two	Germany	3:27.78
1998 [Nagano]	Germany Two	Germany	2:39.41
2002 [Salt Lake City]	Germany Two	Germany	3:07.51
2006 [Turin]	Germany One	Germany	3:40.42
2010 [Vancouver]	United States One	United States	3:24.46
2014 [Sochi]	<i>Vacant – Russia won but was disqualified</i>		
2018 [PyeongChang]			

**Curling** was added as an official sport for the **1998 Nagano Games**.

In each of the men's and women's competitions, ten nations compete. For the first time *mixed doubles* curling will be contested in the **PyeongChang 2018 Winter Olympics**.

- **Total the number of medals won by each country** and then **rank-order** the totals.
- Try repeating this activity using a **weighted method**, in which:
  - one **gold medal** is worth *three* points,
  - one **silver medal** is worth *two* points, and
  - one **bronze medal** is worth *one* point.

**Rank-order the values** of the medals won.

# Curling



## Men's Curling Medals



Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Canada	3	2	0				
Finland	0	1	0				
Great Britain	0	1	0				
Norway	1	1	1				
Sweden	0	0	1				
Switzerland	1	0	2				
United States	0	0	1				

## Women's Curling Medals



Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Canada	2	1	2				
China	0	0	1				
Denmark	0	1	0				
Great Britain	1	0	1				
Sweden	2	1	1				
Switzerland	0	2	0				

**Compare the performances** of different countries on a circle graph.

**Draw a double-bar graph** comparing all countries' results.

**Create math questions and number stories** based on the data shown in the tables.





Year [Venue]	Gold Medal	Silver Medal	Bronze Medal
1920 [Antwerp]	Sweden	Norway	Norway
1924 [Charmonix]	Sweden	Austria	Switzerland
1928 [St. Moritz]	Sweden	Austria	Belgium
1932 [Lake Placid]	Austria	Sweden	Canada
1936 [Garmisch-Partenkirchen]	Austria	Germany	Austria
1948 [St. Moritz]	United States	Switzerland	Austria
1952 [Oslo]	United States	Austria	United States
1956 [Cortina d'Ampezzo]	United States	United States	United States
1960 [Squaw Valley]	United States	Czechoslovakia	Canada
1964 [Innsbruck]	Germany	France	United States
1968 [Grenoble]	Austria	United States	France
1972 [Sapporo]	Czechoslovakia	Soviet Union	France
1976 [Innsbruck]	Great Britain	Soviet Union	Canada
1980 [Lake Placid]	Great Britain	East Germany	United States
1984 [Sarajevo]	United States	Canada	Czechoslovakia
1988 [Calgary]	United States	Canada	Soviet Union
1992 [Albertville]	Unified Team*	United States	Czechoslovakia
1994 [Lillehammer]	Russia	Canada	France
1998 [Nagano]	Russia	Canada	France
2002 [Salt Lake City]	Russia	Russia	United States
2006 [Turin]	Russia	Switzerland	Canada
2010 [Vancouver]	United States	Russia	Japan
2014 [Sochi]	Japan	Canada	Kazakhstan
2018 [PyeongChang]			

\*The Unified Team at the 1992 Winter Olympics in Albertville was a joint team consisting of six of the fifteen former Soviet republics: Russia, Ukraine, Kazakhstan, Belarus, Uzbekistan and Armenia.



# Men's Figure Skating

Comparing Records



<b>Year [Venue]</b>	<b>Gold Medal</b>	<b>Silver Medal</b>	<b>Bronze Medal</b>
1920 [Antwerp]	Sweden	Sweden	United States
1924 [Charmonix]	Austria	United States	Great Britain
1928 [St. Moritz]	Norway	Austria	United States
1932 [Lake Placid]	Norway	Austria	United States
1936 [Garmisch-Partenkirchen]	Norway	Great Britain	Sweden
1948 [St. Moritz]	Canada	Austria	Great Britain
1952 [Oslo]	Great Britain	United States	France
1956 [Cortina d'Ampezzo]	United States	United States	Austria
1960 [Squaw Valley]	United States	Netherlands	United States
1964 [Innsbruck]	Netherlands	Austria	Canada
1968 [Grenoble]	United States	East Germany	Czechoslovakia
1972 [Sapporo]	Austria	Canada	United States
1976 [Innsbruck]	United States	Netherlands	East Germany
1980 [Lake Placid]	East Germany	United States	West Germany
1984 [Sarajevo]	East Germany	United States	Soviet Union
1988 [Calgary]	East Germany	Canada	United States
1992 [Albertville]	United States	Japan	United States
1994 [Lillehammer]	Ukraine	United States	China
1998 [Nagano]	United States	United States	China
2002 [Salt Lake City]	United States	Russia	United States
2006 [Turin]	Japan	United States	Russia
2010 [Vancouver]	Korea	Japan	Canada
2014 [Sochi]	Russia	Korea	Italy
2018 [PyeongChang]			



## Comparing Records

# Women's Figure Skating



# Comparing Records

Year [Venue]	Gold Medal	Silver Medal	Bronze Medal
1920 [Antwerp]	Finland	Norway	Great Britain
1924 [Charmonix]	Austria	Finland	France
1928 [St. Moritz]	France	Austria	Austria
1932 [Lake Placid]	France	United States	Hungary
1936 [Garmisch-Partenkirchen]	Germany	Austria	Hungary
1948 [St. Moritz]	Belgium	Hungary	Canada
1952 [Oslo]	Germany	United States	Hungary
1956 [Cortina d'Ampezzo]	Austria	Canada	Hungary
1960 [Squaw Valley]	Canada	Germany	United States
1964 [Innsbruck]	Soviet Union	Germany	Canada
1968 [Grenoble]	Soviet Union	Soviet Union	West Germany
1972 [Sapporo]	Soviet Union	Soviet Union	East Germany
1976 [Innsbruck]	Soviet Union	East Germany	East Germany
1980 [Lake Placid]	Soviet Union	Soviet Union	East Germany
1984 [Sarajevo]	Soviet Union	United States	Soviet Union
1988 [Calgary]	Soviet Union	Soviet Union	United States
1992 [Albertville]	Unified Team	Unified Team	Canada
1994 [Lillehammer]	Russia	Russia	Canada
1998 [Nagano]	Russia	Russia	Germany
2002 [Salt Lake City]	Canada and Russia*	<i>not awarded</i>	China
2006 [Turin]	Russia	China	China
2010 [Vancouver]	China	China	Germany
2014 [Sochi]	Russia	Russia	Germany
2018 [PyeongChang]			

\*There were allegations of biased scoring or 'medal fixing' by judges sympathetic to Russia's participants. As a result, the gold medal was awarded to both Canada and Russia. No silver medal was awarded.



## Pairs Figure Skating

# Ice Dancing



**Ice Dancing** became a Winter Olympic Games medal sport in 1976. Ice dancers are required to skate to music with a definite beat. Ice dancing is the only discipline of figure skating which allows music with words in competition. There are two components in ice dance competitions: the short dance, and the free dance. The free dance is the most heavily weighted in the scoring and is used as a tiebreaker.

Year [Venue]	Gold Medal	Silver Medal	Bronze Medal
1976 [Innsbruck]	Soviet Union	Soviet Union	United States
1980 [Lake Placid]	Soviet Union	Hungary	Soviet Union
1984 [Sarajevo]	Great Britain	Soviet Union	Soviet Union
1988 [Calgary]	Soviet Union	Soviet Union	Canada
1992 [Albertville]	Unified Team	France	Unified Team
1994 [Lillehammer]	Russia	Russia	Great Britain
1998 [Nagano]	Russia	Russia	France
2002 [Salt Lake City]	France	Russia	Italy
2006 [Turin]	Russia	United States	Ukraine
2010 [Vancouver]	Canada	United States	Russia
2014 [Sochi]	United States	Canada	Russia
2018 [PyeongChang]			

## Comparing Records

# Figure Skating Olympic Medal Summary



2014 Sochi Figure Skating Medals

Country (# of participants)	Men's	Women's	Mixed Pairs	Ice Dancing	Team Event	Previous Medal Count	Current Medal Totals
Austria (4)						20	
Belgium (1)						2	
Canada (17)	1			1	1	22	
China (9)						7	
Czech Rep. (3)						5	
Germany (10)			1			22	
France (9)						12	
Great Britain (6)						15	
Italy (11)		1				1	
Japan (10)	1					4	
Kazakhstan (2)	1					0	
Korea (3)		1				1	
Norway (1)						6	
Russia (15)			2	2	1	46	
Sweden (2)						10	
Ukraine (6)						2	
United States (15)				1	1	47	

### Watching the Olympics:

The 2010 Vancouver Olympics averaged 24.4 million TV viewers in primetime. People also follow the Olympics on the Internet.

In North America the Figure Skating events are among the most popular with viewers.

### Suggested Activities:

Fill in the **'Current Medal Totals'** by adding the data from the 2014 Sochi Winter Olympics to the **'Previous Medal Count'** for each event.

Make a **bar graph** showing the eight countries with the **most medals** in the **'Previous Medal Count'** column.

Make another **bar graph** showing the eight countries with the **most medals** in the **'Current Medal Totals'** column.

**Compare the two bar graphs.** Was there any change in the **ranking order** of the eight top countries after the 2014 Sochi medals were awarded?

**Create math questions or number stories** based on the data shown in this table.



**Figure Skating** – Figure skating is a wonderful sport that mixes incredible athleticism with music, choreography and theater—and it is scored by judges. The scoring system is points-based. Skaters receive marks for each performance—a ‘technical’ score and a ‘program components’ score’—that are added together to form a ‘composite score’. The skater with the highest ‘composite score’ wins.

**Men’s Singles 2014 Sochi**



Country	Name	Gold Medal Score	Silver Medal Score	Bronze Medal Score
Japan	Yuzuru Hanyu	280.09		
Canada	Patrick Chan		275.62	
Kazakhstan	Denis Ten			255.10

**Ladies’ Singles 2014 Sochi**



Country	Name	Gold Medal Score	Silver Medal Score	Bronze Medal Score
Russia	Alelina Sotnikova	224.59		
Korea	Kim Yuna		219.11	
Italy	Carolina Kostner			216.73

**Ice Dancing 2014 Sochi**



Country	Name	Gold Medal Score	Silver Medal Score	Bronze Medal Score
United States	Meryl Davis & Charlie White	195.52		
Canada	Tessa Virtue & Scott Moir		190.99	
Russia	Eleana Llinikh & Nikita Katsalapov			183.48

Create math questions and number stories based on the data shown in these tables.

What is the *difference* between the **Men’s Gold Medal** score and the **Men’s Bronze Medal** score?

Find the *total* of all the scores for **Canada**. Then the *total* of all the scores for **Russia**. What is the *difference* between these total scores?

Find the *average* for the three scores in each table.



# Men's Ice Hockey

Year [Venue]	Gold Medal	Silver Medal	Bronze Medal
1920 [Antwerp]	Canada	United States	Czechoslovakia
1924 [Charmonix]	Canada	United States	Great Britain
1928 [St. Moritz]	Canada	Sweden	Switzerland
1932 [Lake Placid]	Canada	United States	Germany
1936 [Garmisch-Partenkirchen]	Great Britain	Canada	United States
1948 [St. Moritz]	Canada	Czechoslovakia	Switzerland
1952 [Oslo]	Canada	United States	Sweden
1956 [Cortina d'Ampezzo]	Soviet Union	United States	Canada
1960 [Squaw Valley]	United States	Canada	Soviet Union
1964 [Innsbruck]	Soviet Union	Sweden	Czechoslovakia
1968 [Grenoble]	Soviet Union	Czechoslovakia	Canada
1972 [Sapporo]	Soviet Union	United States	Czechoslovakia
1976 [Innsbruck]	Soviet Union	Czechoslovakia	West Germany
1980 [Lake Placid]	United States	Soviet Union	Sweden
1984 [Sarajevo]	Soviet Union	Czechoslovakia	Sweden
1988 [Calgary]	Soviet Union	Finland	Sweden
1992 [Albertville]	Unified Team	Canada	Czechoslovakia
1994 [Lillehammer]	Sweden	Canada	Finland
1998 [Nagano]	Czech Republic	Russia	Finland
2002 [Salt Lake City]	Canada	United States	Russia
2006 [Turin]	Sweden	Finland	Czech Republic
2010 [Vancouver]	Canada	United States	Finland
2014 [Sochi]	Canada	Sweden	Finland
2018 [PyeongChang]			

Comparing Records



# Women's Ice Hockey



Year [Venue]	Gold Medal	Silver Medal	Bronze Medal
1998 [Nagano]	Czech Republic	Russia	Finland
2002 [Salt Lake City]	Canada	United States	Sweden
2006 [Turin]	Canada	Sweden	United States
2010 [Vancouver]	Canada	United States	Finland
2014 [Sochi]	Canada	United States	Switzerland
2018 [PyeongChang]			



**Did you know?** Although women's ice hockey was first held at the 1998 Winter Olympics in Nagano, the Nagano Organizing Committee was hesitant to include the event because of the additional costs of staging the tournament. An agreement was reached that limited the competition to 6 teams and ensured that no additional facilities would be built. There will be 8 teams participating in PyeongChang in 2018.

The following chart shows the goalies' **saves** and **goals against** in the games they played in the **2010 Vancouver Winter Olympics**.

Name	Country	Minutes Played	Saves	Goals Against	Save Percentage
Charline Labonté	Canada	180	41	1	
Kim St-Pierre	Canada	120	12	1	
Maijia Hassinen	Finland	195	77	11	
Jennifer Harss	Germany	190	97	6	
Debora Montanari	Italy	220	142	31	
Irina Gashennikova	Russia	266	85	12	
Kim Martin	Sweden	190	89	7	
Florence Schelling	Switzerland	150	84	6	
Patricia Elsmore-Sautter	Switzerland	150	91	12	
Chandra Gunn	United States	250	50	6	

Calculate the **save percentage** for each player.

Which player has the **best save percentage**?

Look at Chandra Gunn of the United States. She played 250 minutes but only had a total of 56 shots on her. What does this say about her team?

*[Some very good defensive play from her team mates!]*

# WOMEN'S Ice Hockey – 2018 Olympics

**Eight teams will compete.** The **top four teams** compete in **Group A**, while the **remaining four teams** compete in **Group B**. Enter the data for the scores of the games in the **Preliminary Round Games** and complete the tables for the **Preliminary Round Results**. Enter the teams and the scores for the **Quarterfinals**, **Semifinals**, and **Medal Games**.

**Compare** the performances of the different countries. **Create math questions** and **number stories** based on the data in the tables.

## Preliminary Round - Games

Group A	
<i>Feb. 11, 2018</i>	Score
Finland	
United States	
Canada	
Russia	

Group B	
<i>Feb. 10, 2018</i>	Score
Japan	
Sweden	
Switzerland	
Korea	

<i>Feb. 13, 2018</i>	Score
Canada	
Finland	
United States	
Russia	

<i>Feb. 12, 2018</i>	Score
Switzerland	
Japan	
Sweden	
Korea	

<i>Feb. 15, 2018</i>	Score
United States	
Canada	
Russia	
Finland	

<i>Feb. 14, 2018</i>	Score
Sweden	
Switzerland	
Korea	
Japan	

Quarterfinals	
<i>Feb. 17, 2018</i>	Score
A3	
B2	
B1	
A4	

The third place-team in Group A plays the second place-team in Group B.

The fourth place-team in Group A plays the first place-team in Group B.

Semifinals	
<i>Feb. 19, 2018</i>	Score
A1	
A2	

The top two teams in Group A receive a bye to the semifinals.

Third Place (Bronze Medal)	
<i>Feb. 21, 2018</i>	Score

The two-losing teams from the semifinals play for the Bronze Medal.

Final (Silver and Gold Medals)	
<i>Feb. 22, 2018</i>	Score

The two-winning teams from the semifinals play for the Silver and Gold Medals.

## Preliminary Round - Results

GROUP A	Wins	Losses	Total Goals Scored	Total Goals Against
Canada				
Finland				
Russia				
United States				

GROUP B	Wins	Losses	Total Goals Scored	Total Goals Against
Korea				
Japan				
Sweden				
Switzerland				



# Doubles Luge – Gold Medal

**Luge**, which takes its name from the French word for sled, is **one of the fastest Olympic sports**, with riders **exceeding 90 mph**. Luge was introduced to the Winter Olympic Games in 1964, with both men's and women's events and a doubles event. Doubles luge is a one-day competition in which pairs of athletes take two runs down a course. Each run counts and the fastest total time determines the winner.

Year [Venue]	Gold Medal	Time (minutes & seconds)	Silver Medal	Time (minutes & seconds)
1964 [Innsbruck]	Austria	1:41.62	Austria	1:41.91
1968 [Grenoble]	East Germany	1:35.85	Austria	1:36.34
1972 [Sapporo]	Germany and Italy	1:28.35	Two teams tied – both awarded Gold medals	
1976 [Innsbruck]	East Germany	1:25.604	West Germany	1:25.889
1980 [Lake Placid]	East Germany	1:19.331	Italy	1:19.606
1984 [Sarajevo]	West Germany	1:23.620	Soviet Union	1:23.660
1988 [Calgary]	East Germany	1:31.940	East Germany	1:32.039
1992 [Albertville]	Germany	1:32.053	Germany	1:32.239
1994 [Lillehammer]	Italy	1:36.720	Italy	1:36.769
1998 [Nagano]	Germany	1:41.105	United States	1:41.127
2002 [Salt Lake City]	Germany	1:26.082	United States	1:26.216
2006 [Turin]	Austria	1:34.497	Germany	1:34.807
2010 [Vancouver]	Austria	1:22.705	Latvia	1:22.969
2014 [Sochi]	Germany	1:38.933	Austria	1:39.455
2018 [PyeongChang]				

## Comparing Records

Look up the data for the **2018 PyeongChang Olympics** and complete the table.

What are the **5 fastest times** for the **gold medal**?

How many **countries** are represented by these 5 fastest times?

What is the **difference** between the **fastest gold medal time** and the **slowest gold medal time**? Between the **fastest silver medal time** and the **slowest silver medal time**?

In the **2014 Sochi Olympics** the Canadian team of Justin Smith and Tristan Walker almost made it to the medal podium! What is the **difference between their time** and the **Bronze medal winners time**?

Create **math** questions or **story problems** based on the data in these tables.

2014 [Sochi]	Athletes	Time	Medal
Germany	Tobias Arlt and Tobias Wendl	1:38.933	Gold
Austria	Andreas Linger and Wolfgang Linger	1:39.455	Silver
Latvia	Andris Sics and Juris Sics	1:39.790	Bronze
Canada	Justin Smith and Tristan Walker	1:39.840	Fourth Place

# SKI JUMP – GOLD MEDAL

## Men's 70m or K90

The speed of the skier is normally measured about 10 meters before the end of the takeoff; jumpers can reach speeds of 95 kilometers per hour on large hills and 105 kilometers per hour on ski flying hills.



### Comparing Records

Year [Venue]	Athlete	Country	Total Score
1928 [St. Moritz]	Alf Andersen	Norway	192.1
1932 [Lake Placid]	Birger Ruud	Norway	228.1
1936 [Garmisch-Partenkirchen]	Birger Ruud	Norway	232
1948 [St. Moritz]	Petter Hugsted	Norway	228.1
1952 [Oslo]	Arnfinn Bergmann	Norway	226
1956 [Cortina d'Ampezzo]	Antti Hyvarinen	Finland	227
1960 [Squaw Valley]	Helmut Recknagel	Germany	227.2
1964 [Innsbruck]	Veikko Kankkonen	Finland	229.9
1968 [Grenoble]	Jiri Rasko	Czechoslovakia	216.5
1972 [Sapporo]	Yukio Kasaya	Japan	244.2
1976 [Innsbruck]	Hans-Georg Aschenbach	East Germany	252
1980 [Lake Placid]	Anton Innauer	Austria	266.3
1984 [Sarajevo]	Jens Weisflogg	East Germany	215.2
1988 [Calgary]	Matti Nykanen	Finland	229.1
1992 [Albertville]	Ernst Vettori	Austria	222.8
1994 [Lillehammer]	Epsen Bredesen	Norway	282
1998 [Nagano]	Jani Soininen	Finland	234.5
2002 [Salt Lake City]	Simon Ammann	Switzerland	281.4
2006 [Turin]	Lars Brystoel	Norway	266.5
2010 [Vancouver]	Simon Ammann	Switzerland	276.5
2014 [Sochi]	Kamil Stoch	Poland	278.0
2018 [PyeongChang]			

The scoring system combines distance with style points, recorded by five judges. Each jumper gets a trial jump and two scored jumps.



The scoring system combines distance with style points, recorded by five judges. Each jumper gets a trial jump and two scored jumps.

Since 1936, when the first jump beyond 100 metres was made, the discipline of ski flying – an offshoot of ski jumping – has produced all the world records. As of March 2017, the official world record for the longest ski jump is **253.5 metres**, set by Stefan Kraft at Vikersundbakken in Vikersund, Norway.

# SKI JUMP – GOLD MEDAL

## Men's 90m or K120

### Comparing Records

Year [Venue]	Athlete	Country	Total Score
1964 [Innsbruck]	Toralf Engan	Norway	230.7
1968 [Grenoble]	Vladimir Belousov	Soviet Union	231.3
1972 [Sapporo]	Wojciech Foruna	Poland	219.9
1976 [Innsbruck]	Karl Schnabl	Austria	234.8
1980 [Lake Placid]	Jouko Tormanen	Finland	271.0
1984 [Sarajevo]	Matti Nykanen	Finland	231.2
1988 [Calgary]	Matti Nykanen	Finland	224.0
1992 [Albertville]	Toni Nieminen	Finland	239.5
1994 [Lillehammer]	Jens Weissflog	Germany	274.5
1998 [Nagano]	Kazuyoshi Funaki	Japan	272.3
2002 [Salt Lake City]	Simon Ammann	Switzerland	281.4
2006 [Turin]	Thomas Morgenstern	Austria	276.9
2010 [Vancouver]	Simon Ammann	Switzerland	283.6
2014 [Sochi]	Kamil Stoch	Poland	278.7
2018 [PyeongChang]			



Note: In April 2011 the International Olympic Committee officially accepted women ski jumping into the official Olympic program for the 2014 Winter Olympics in Sochi, Russia.

# WOMEN'S SKI JUMP



Women have been ski jumping for over 100 years. While it's arguably the dream of every elite athlete to represent her country at the Olympic Games, that opportunity did not exist for women ski jumpers around the world. Women ski jumpers have been lobbying for inclusion of this event in every Winter Games since 1998. Finally, **a women's ski jumping event was added to the 2014 Sochi Olympic Winter Games** program. However, there is only one event for the women – the “normal hill competition” – the smaller of the two hills – whereas the men will compete in normal hill, large hill and team competition.

2014 Sochi – Women's Ski Jump				Distance		
Country	Athlete	Total Score*	Medal	1 <sup>st</sup> Jump	2 <sup>nd</sup> Jump	Total Distance
Germany	Carina Vogt	247.4	Gold	103.0	97.5	
Austria	Daniela Iraschko-Stolz	246.2	Silver	98.5	104.5	
France	Coline Mattel	245.2	Bronze	99.5	97.5	
Japan	Sara Takanashi	243.0	4th	100.0	98.5	
Slovenia	Maja Vtic	241.9	6th	100.5	100.5	
Norway	Maren Lundby	235.5	8th	97.0	100.0	

\* The scoring system combines 'distance' with 'style points' recorded by five judges. Each jumper gets a trial jump and two scored jumps.

- Add the 1st Jump and 2nd Jump 'distance' and fill in the 'Total Distance' column.
- Construct a bar graph that shows the 'Total Distance' data.
- Compare the bar graph results to the 'Total Score' results in the chart. Remember the 'Total Score' also includes the judges' scoring points.
- If only the 'distance' counted, what would be the order of the medals and ranking? Who would have won the gold? the silver? and the bronze?



# Snowboarding - introduced at the 1998 Nagano Winter Olympics

The massive air time and amazing tricks makes snowboarding a crowd favorite at the Winter Olympics. This sport combines the body style of surfing with the acrobatics of skateboarding. It has spread throughout the world and is **quickly becoming one of the most popular events of the Winter Olympics.**

In 1998 there were 8 events (4 for men and 4 for women) and in 2018 there will be 20 events (10 for men and 10 for women). A maximum of 258 athletes can compete. No nation can have more than 26 snowboarders. In 2018 PyeongChange only the United States will have the maximum of 26; Switzerland will have 25 and Canada 20.



Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	1	1	4				
Australia	1	1	0				
Canada	3	2	2				
Czech Republic	1	0	0				
Finland	0	2	1				
France	3	3	4				
Germany	1	3	1				
Great Britain	0	0	1				
Italy	0	1	1				
Japan	0	2	1				
Netherlands	1	0	0				
Norway	0	3	1				
Russia	2	2	1				
Slovakia	0	1	0				
Slovenia	0	1	1				
Sweden	0	1	0				
Switzerland	7	2	3				
United States	10	5	9				

- Find the **total number of medals won by each country** and then **rank-order** the totals.
- Try repeating this activity using a **weighted method**, in which:
  - one **gold medal** is worth *three* points,
  - one **silver medal** is worth *two* points, and
  - one **bronze medal** is worth *one* point.

**Rank-order the values** of the medals won.



# Snowboarding - Medal Results



First introduced in the **1998 Nagano Winter Olympics**, snowboarding is quickly becoming one of the most popular events of the Winter Olympics.

- Complete the table for the 2018 PyeongChang data.
- Total the medals by country.
- Order the results by country.

Country	1998 Nagano	2002 Salt Lake City	2006 Turin	2010 Vancouver	2014 Sochi	2018 PyeongChang	Total Medals	Order
Austria	1		1	2	2			
Australia				1	1			
Canada	1		1	3	2			
Czech Republic					1			
Finland			1	1	1			
France	1	3	1	3	2			
Germany	2		1		2			
Great Britain					1			
Italy	1	1						
Japan					3			
Netherlands				1				
Norway	2		1		1			
Russia				1	4			
Slovakia			1					
Slovenia					2			
Sweden		1						
Switzerland	2	2	4	1	3			
United States	2	5	7	5	5			
<b>Total Medals</b>	12	12	18	18	30			

Create math questions or number stories based on the data shown in this table.





# Speed Skating – Olympic Medals

Speed Skating appeared for the first time in 1924 at the first Olympic Winter Games in Chamonix. **Initially, only men could participate.** It was not until the **1960 Games in Squaw Valley that women’s speed skating was officially included** in the Winter Olympics.



Short track and long track are the 2 types of Speed Skating competition. Short track begins as a mass start and has been likened to roller derby on skates. **It was not held as an official event until Albertville in 1992.**

Speed Skating – Olympic Medal Totals							
Country	Gold Medals	Silver Medals	Bronze Medals	Total Medals	Order	Weighted Total	Order
Austria	1	2	3				
Canada	8	12	15				
China	1	3	3				
Finland	7	8	9				
Germany	24	27	19				
Japan	1	5	9				
Netherlands	35	36	34				
Norway	25	28	27				
Russia	27	21	24				
South Korea	4	4	1				
Sweden	7	4	5				
United States	29	22	16				

Look up and add the data for any other countries that interest you.

Create **math questions** or **story problems** based on the data in this table.

- **Total the medals** won by each country and rank order the results. Draw a bar graph to represent the data.
- Repeat this activity using a **weighted method**, in which:
  - **gold** medals are worth **3** points
  - **silver** medals are worth **2** points
  - **bronze** medals are worth **1** point.
 Draw a bar graph to represent the data. Compare the two bar graphs.

# Men's Speed Skating – 1000m



Record Holder	Name	Record	Date Set
Olympic (Netherlands)	Gerard van Velde	1:07.18 1 minute, 7.18 seconds	2002 Salt Lake City



This record set by Gerard van Velde stands at approximately one minute. **How far can you run in one minute?**

Follow the directions below and you will find out!

- Mark off the length of the gym in 5 metre sections.
- Run back and forth for one minute and keep track of how many times you were able to run the length of the gym. (Add any partial lengths.)
- Find the total distance.
- Ask a friend to help you keep track of the lengths you run. Make sure that you both agree on the total distance calculated!

Van Velde was considered the best Dutch sprinter during the early 1990s but did not manage to win a medal in either the 1992 or 1994 Winter Olympics. The 1992 Games were particularly frustrating, as he missed a bronze medal by only one-hundredth of a second.

During the late 1990s, clap skates became standard in Olympic competition. Van Velde had such difficulty adjusting to the techniques required with these new skates that he retired from skating and became a car salesman. However, he was not finished with the skating world.

In Salt Lake City, he started before all the other favorites and raced to a world record finish with a time of 1:07.18. This time he shaved more than half a second from the previous best world time, and more than a second from his personal best. The skaters who followed were unable to best him, and he won the gold medal.

Create a Master Distance Chart for your gymnasium.

When you have successfully recorded your own distance (and you and your partner agree to that distance) find the distances run by four other people in your class.

Show all the distances on a graph.

Print a copy of **Master Distance Chart** (see next page).

Master Distance Chart for the Gymnasium			
Number of Times	Gym Length _____ m	Partial Lengths	Total
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

# Master Distance Chart for the *Gymnasium*

Number of Times	Gym Length ____ m	Partial Lengths	<b>Total</b>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

# Men's Speed Skating – 1500m

## Comparing Records



Year [Venue]	Athlete	Country	Time (minutes & seconds)
1924 [Charmonix]	Clas Thunberg	Finland	2:20.8
1928 [St. Moritz]	Clas Thunberg	Finland	2:21.1
1932 [Lake Placid]	John Shea	United States	2:57.5
1936 [Garmisch-Partenkirchen]	Charles Mathisen	Norway	2:19.2
1948 [St. Moritz]	Sverre Farstad	Norway	2:17.6
1952 [Oslo]	Hjalmer Andersen	Norway	2:20.4
1956 [Cortina d'Ampezzo]	Yury Mikhailov	Soviet Union	2:08.6
1960 [Squaw Valley]	Yevgeny Grishin Roald Aas	Soviet Union Norway	2:10.4
1964 [Innsbruck]	Ants Antson	Soviet Union	2:10.3
1968 [Grenoble]	Cornelius Verkerk	Netherlands	2:03.4
1972 [Sapporo]	Ard Schenk	Netherlands	2:02.96
1976 [Innsbruck]	Jan Egil Storholt	Norway	1:59.38
1980 [Lake Placid]	Eric Heiden	United States	1:55.44
1984 [Sarajevo]	Gaeten Boucher	Canada	1:58.36
1988 [Calgary]	Andre Hoffmann	East Germany	1:52.06
1992 [Albertville]	Johann Olav Koss	Norway	1:54.81
1994 [Lillehammer]	Johann Olav Koss	Norway	1:51.29
1998 [Nagano]	Adne Sondral	Norway	1:47.87
2002 [Salt Lake City]	Derek Parra	United States	1:43.95
2006 [Turin]	Enrico Fabris	Italy	1:45.97
2010 [Vancouver]	Mark Tuitert	Netherlands	1:45.57
2014 [Sochi]	Zbigniew Brodka	Poland	1:45.006*
2018 [PyeongChang]			



\*Measurements in thousandths were only introduced in speed skating after the 2010 Olympics, so **this was the closest win in Olympic speed skating history**. The **Silver medal** was won by Netherlands' Koen Verweij with a time of **1:45.009**. Canada's Denny Morrison took the **Bronze medal** with a time of **1:45.22**.

# Men's Speed Skating – 10 000m



## Comparing Records

Year [Venue]	Gold	Time (minutes & seconds)	Silver	Time (minutes & seconds)	Bronze	Time (minutes & seconds)
1980 [Lake Placid]	United States	14:28.23	Netherlands	14:36.03	Norway	14:36.60
1984 [Sarajevo]	Soviet Union	14:39.90	Sweden	14:39.95	East Germany	14:46.91
1988 [Calgary]	Sweden	13:48.20	Austria	13:56.11	Netherlands	14:00.55
1992 [Albertville]	Netherlands	14:12.12	Norway	14:14.58	Norway	14:18.13
1994 [Lillehammer]	Norway	13:30.55	Norway	13:49.25	Netherlands	13:56.73
1998 [Nagano]	Netherlands	13:15.33	Netherlands	13:25.76	Netherlands	13:28.19
2002 [Salt Lake City]	Netherlands	12:58.92	Netherlands	13:10.03	Norway	13:16.92
2006 [Turin]	Netherlands	13:01.57	United States	13:05.40	Netherlands	13:08.80
2010 [Vancouver]	Korea	12:58.55	Russia	13:02.07	Netherlands	13:06.73
2004 [Sochi]	Netherlands	12:44.45	Netherlands	12:49.02	Netherlands	13:07.19
2018 [PyeongChang]						

- Complete the table for the **2018 PyeongChang Winter Olympics**.
- **Total the medals** won by each country and rank order the results. Draw a bar graph to represent the data.
- Repeat this activity using a **weighted method**, in which:
  - **gold** medals are worth **3** points
  - **silver** medals are worth **2** points
  - **bronze** medals are worth **1** point.

Draw a bar graph to represent the data. Compare the two bar graphs.

- What is the difference between the **fastest** time and the **slowest** time shown on the table?
- How much **faster** was the **gold** medal winner in the **2014 Sochi Winter Olympics** than the **gold** medal winner in the **1984 Sarajevo Winter Olympics**?
- How much **faster** would the **silver** medal winner in the **1984 Sarajevo Winter Olympics** have needed to skate in order to tie the **gold** medal winner?
- For each of the eleven Winter Olympics calculate the difference between the time of the **gold** medal winner and the time of the **bronze** medal winner and show the results on a bar graph.

# Women's Speed Skating – 500m



**Canada** has sent Speed Skating participants to **every** Winter Olympics 1924 through 2014. The only other countries to have participated in speed skating events for **ALL** these 22 Winter Olympics (1924 through 2014) are Norway and the United States.



Women's Speed Skating – 500 metres		Medals – Times in Seconds		
Year [Venue]	Country (athlete)	Gold	Silver	Bronze
2002 [Salt Lake City]	Canada (Catrionna Le May Doan)	74.75		
	Germany (Monique Garbrecht-Enfeldt)		74.94	
	Germany (Sabine Volker)			75.19
2006 [Turin]	Russia (Svetlana Zhurova)	76.57		
	China (Wang Manli)		76.78	
	China (Ren Hui)			76.87
2010 [Vancouver]	South Korea (Lee Sang-haw)	76.09		
	Germany (Jenny Wolf)		76.14	
	China (Wang Biexing)			76.63
2014 [Sochi]	South Korea (Lee Sang-haw)	74.70*		
	Russia ( <i>disqualified</i> )			
	Netherlands (Margot Boer)			75.48
2018 [PyeongChang]				

In the **2002 Salt Lake City Olympics** this event changed from one race of 500 metres to the **accumulated time for two 500-metre races**.

\*Broke the previous Olympic Record held by Catrionna Le May Doan 74.75 (Canada) 2002 Salt Lake City Olympics.

Enter the data for the **2018 PyeongChang Olympics**.

Find the **average** for all the times shown in this table for **Germany**. Do the same for **China**.

What is the **difference** between the **fastest** time and the **slowest** time on this table?

Which country has the best **average**?

By how much?

Create math questions or **number stories** based on the data shown in this table.



# Comparing Records

## Women's Speed Skating 1 000m

Year [Venue]	Gold	Time (minutes & seconds)	Silver	Time (minutes & seconds)	Bronze	Time (minutes & seconds)
1980 [Lake Placid]	Soviet Union	1:24.10	United States	1:25.41	East Germany	1:26.46
1984 [Sarajevo]	East Germany	1:21.61	East Germany	1:22.83	Soviet Union	1:23.21
1988 [Calgary]	East Germany	1:17.65	East Germany	1:17.70	United States	1:18.31
1992 [Albertville]	United States	1:21.90	China	1:21.92	Germany	1:22.10
1994 [Lillehammer]	United States	1:18.74	Germany	1:20.12	China	1:20.22
1998 [Nagano]	Netherlands	1:16.51	United States	1:16.79	Canada	1:17.37
2002 [Salt Lake City]	United States	1:13.83	Germany	1:13.96	United States	1:14.24
2006 [Turin]	Netherlands	1:16.05	Canada	1:16.09	Germany	1:16.11
2010 [Vancouver]	Canada	1:16.56	Netherlands	1:16.58	Netherlands	1:16.72
2014 [Sochi]	China	1:14.02	Netherlands	1:14.69	Netherlands	1:14.90
2018 [PyeongChang]						

- **Complete the table** for the **2018 PyeongChang Winter Olympics**.
- **Total the medals** won by each country and rank order the results. Draw a bar graph to represent the data.
- Repeat this activity using a **weighted method**, in which:
  - **gold** medals are worth **3** points
  - **silver** medals are worth **2** points
  - **bronze** medals are worth **1** point.

Draw a bar graph to represent the data. Compare the two bar graphs.

- What is the difference between the **fastest** time and the **slowest** time shown on the table?
- How much **faster** was the **gold** medal winner in the **2014 Sochi Winter Olympics** than the **bronze** medal winner?
- Add **ALL** the times for the **United States** medals. Do the same for the **Netherlands**. Compare the results. Which country has the **best** (lowest) **average time overall**?
- For each of the eleven Winter Olympics **calculate the difference** between the time of the **gold** medal winner and the time of the **silver** medal winner and show the results on a bar graph.



# Women's Speed Skating

## 1500m Gold Medal

Year [Venue]	Athlete	Country	Time in seconds
1964 [Innsbruck]	Lidiya Skoblikova	Soviet Union	2:22.6
1968 [Grenoble]	Kaija Mustonen	Finland	2:22.4
1972 [Sapporo]	Dianne Holum	United States	2:20.85
1976 [Innsbruck]	Galina Stepanskaya	Soviet Union	2:16.58
1980 [Lake Placid]	Annie Borckink	Netherlands	2:10.95
1984 [Sarajevo]	Karin Kania	East Germany	2:03.42
1988 [Calgary]	Yvonne van Gennip	Netherlands	2:00.68
1992 [Albertville]	Jacqueline Borner	Germany	2:05.87
1994 [Lillehammer]	Emese Hunyady	Austria	2:02.19
1998 [Nagano]	Marianne Timmer	Netherlands	1:57.58
2002 [Salt Lake City]	Anni Friesinger	Germany	1:54.02
2006 [Turin]	Cindy Klassen	Canada	1:55.27
2010 [Vancouver]	Ireen Wust	Netherlands	1:56.89
2014 [Sochi]	Jorien ter Mors	Netherlands	1:53.51
2018 [PyeongChang]			

### Comparing Results

Complete the table for the **2018 PyeongChang Winter Olympics**.

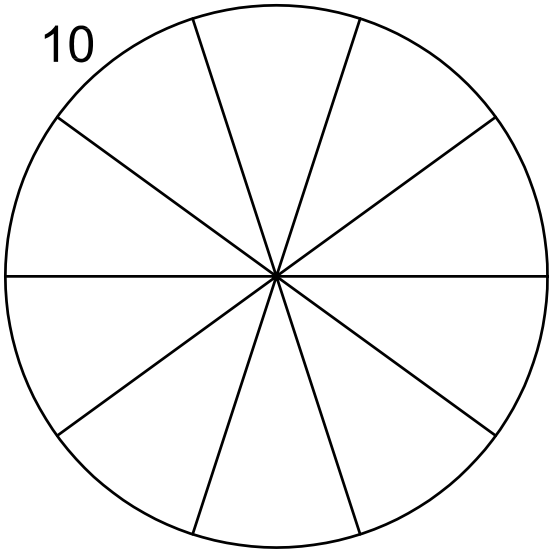
What is the difference between the **fastest** time and the **slowest** time shown on this table?

Which country has the **best average time**?

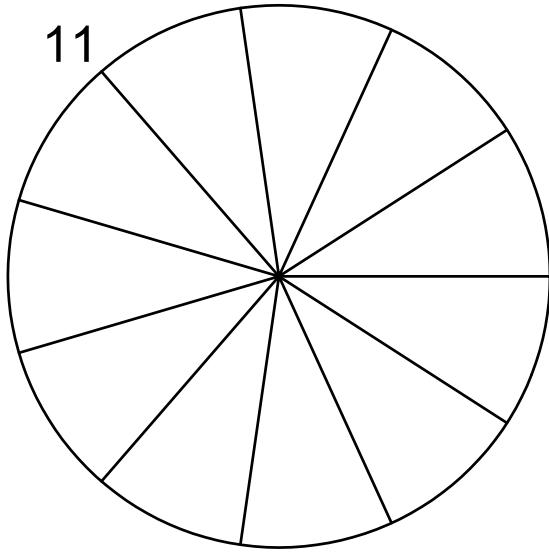
What is the difference between the time in **2014 [Sochi]** and the time in **1988 [Calgary]**?



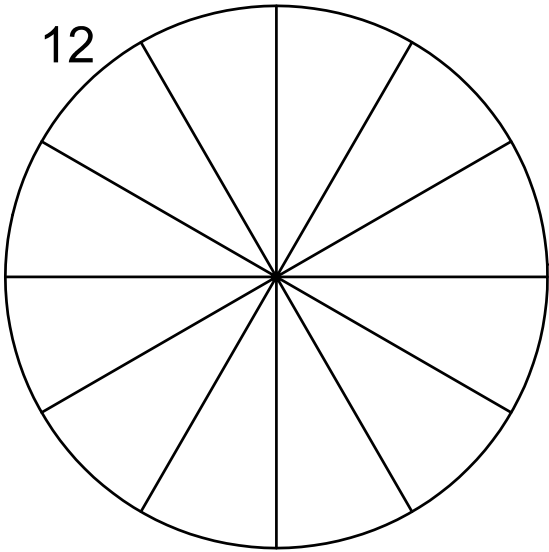
10



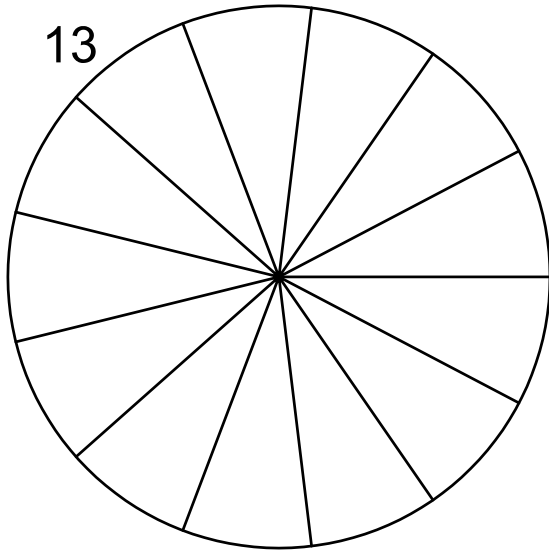
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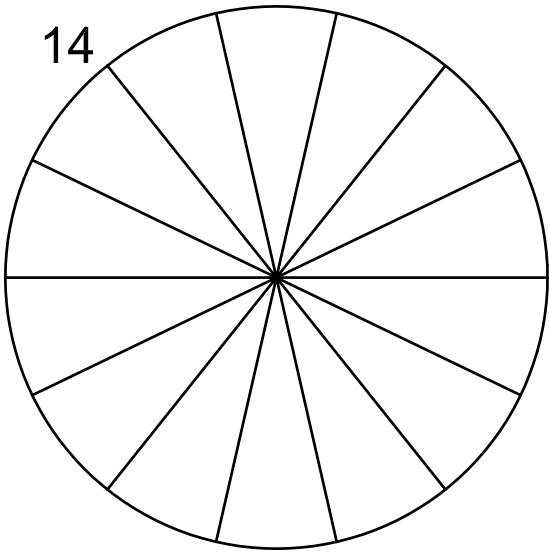
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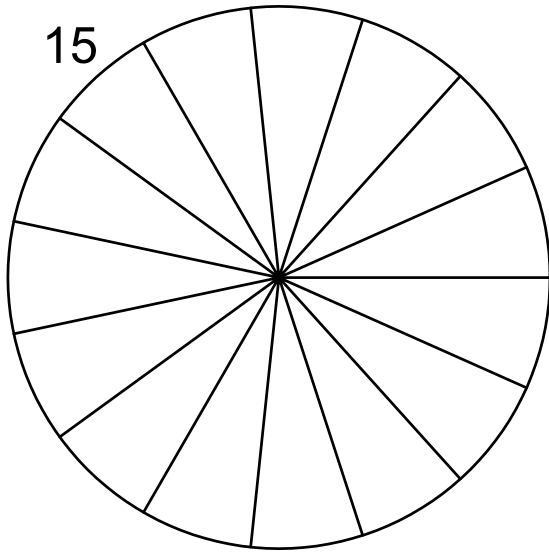
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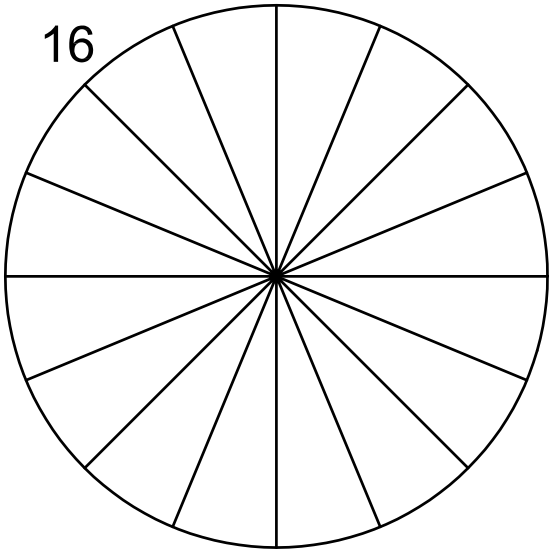
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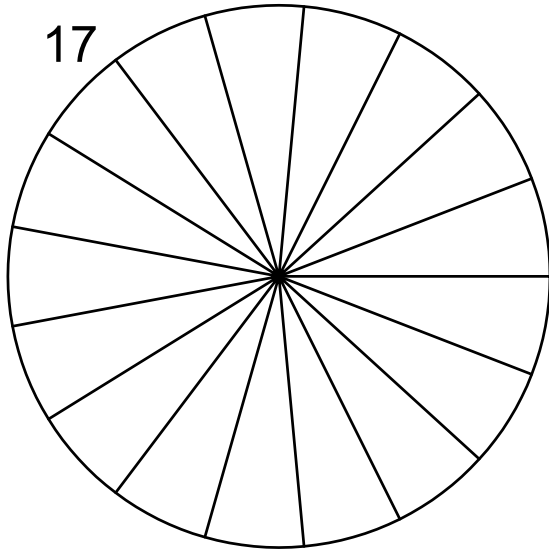
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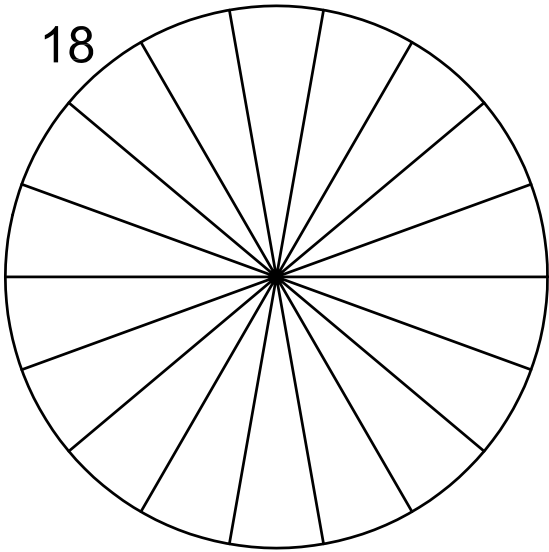
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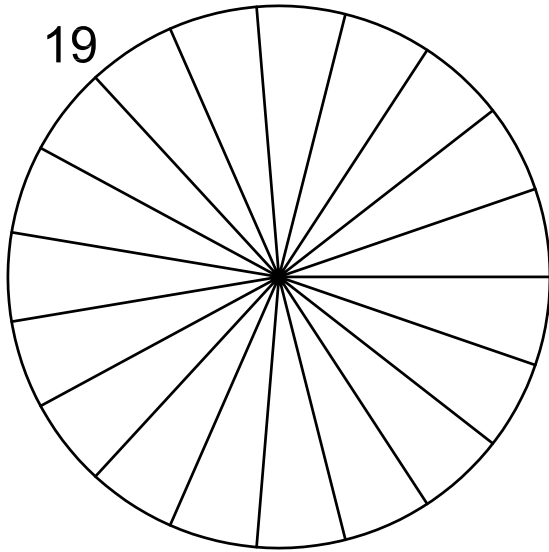
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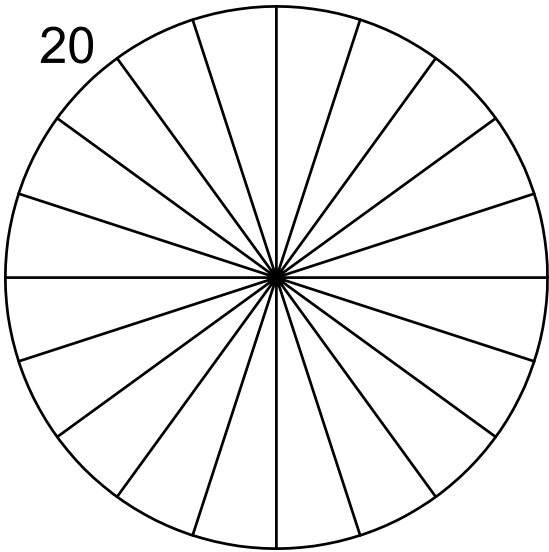
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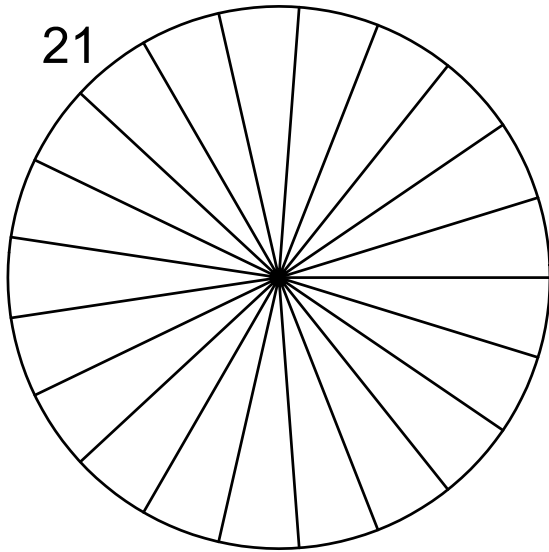
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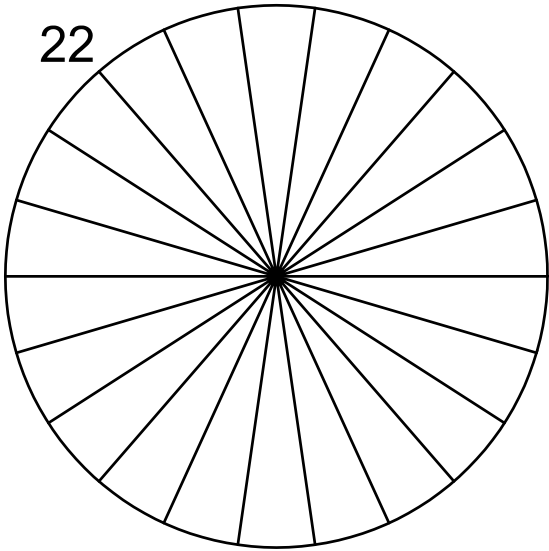
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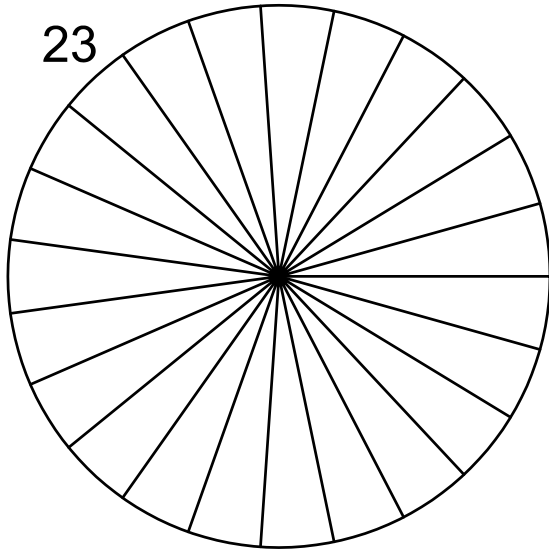
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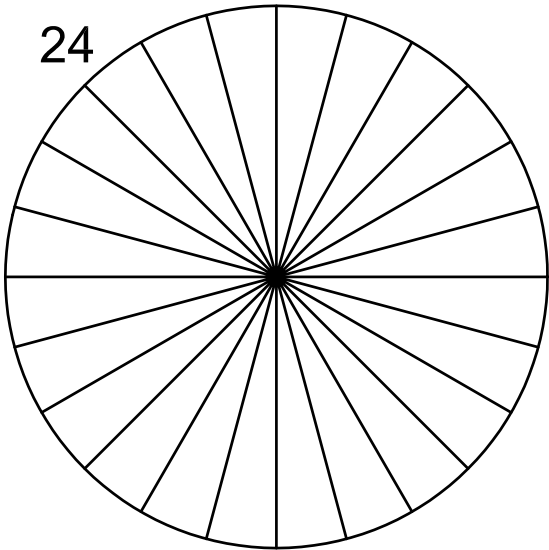
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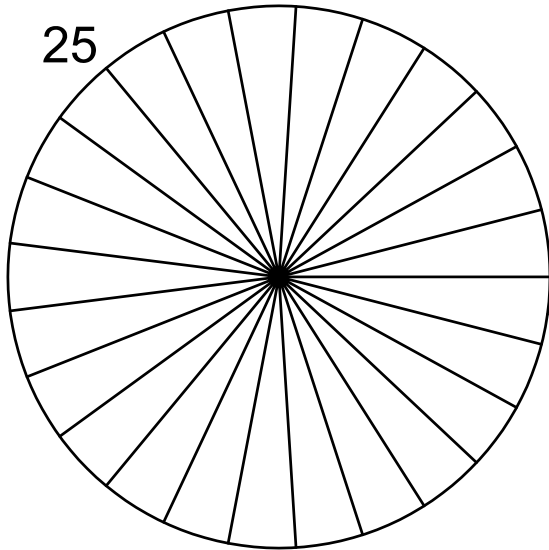
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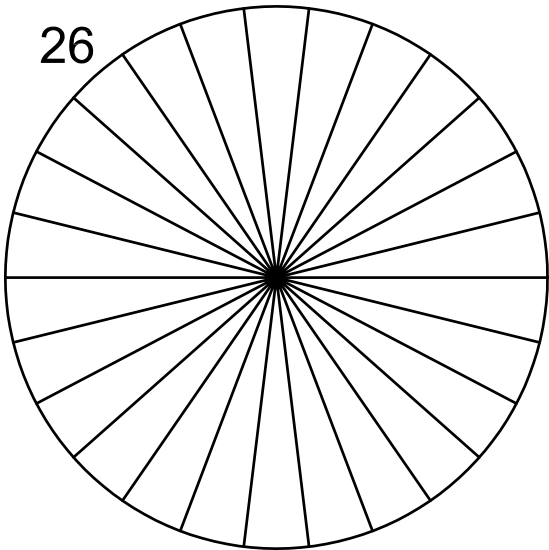
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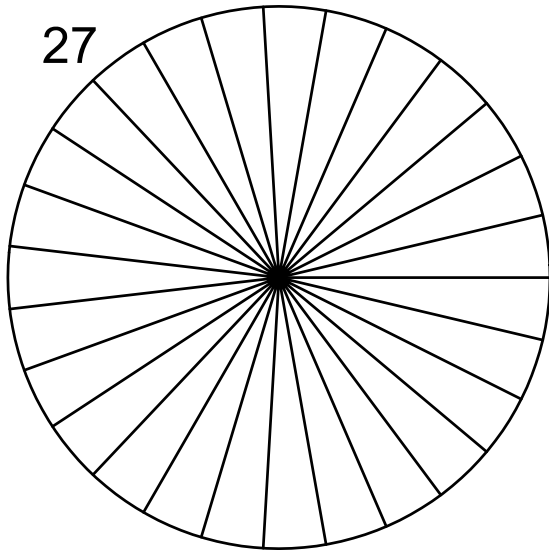
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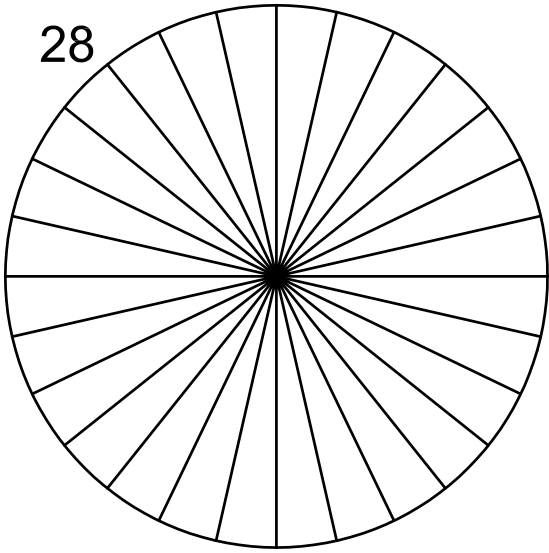
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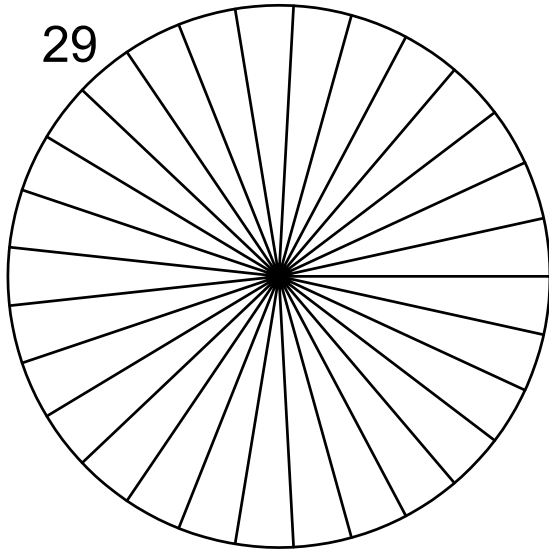
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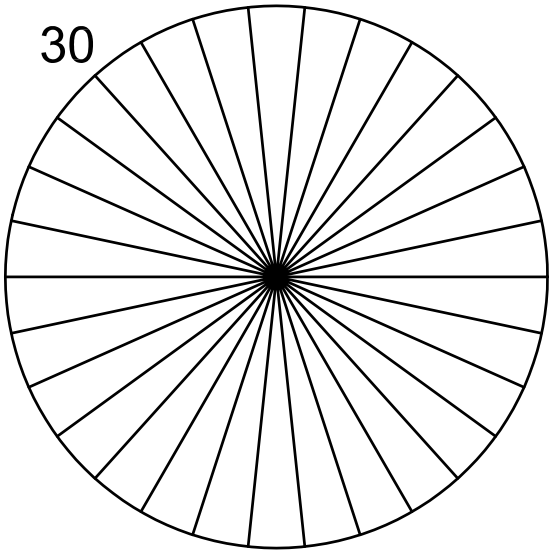
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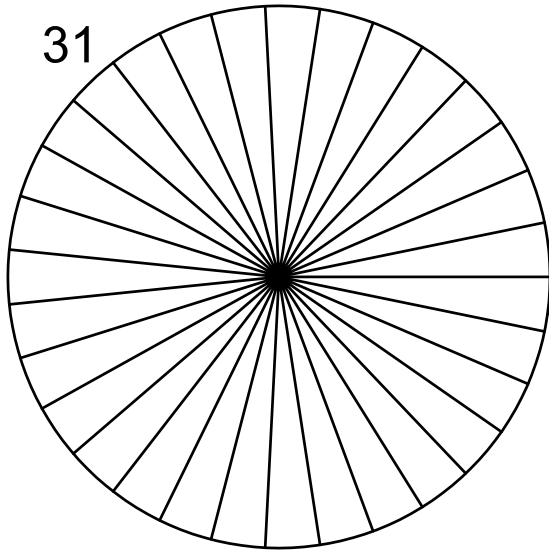
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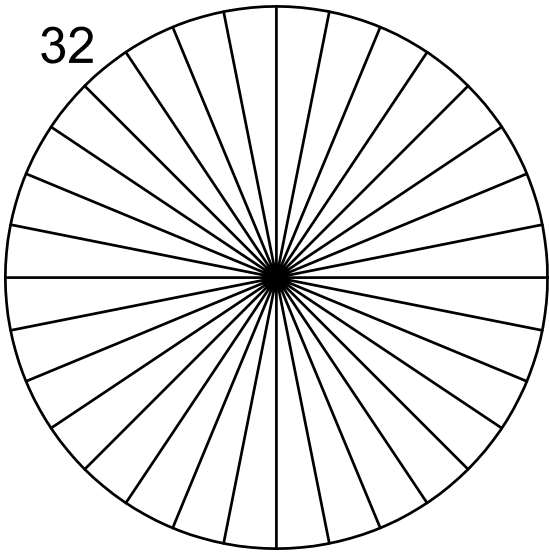
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