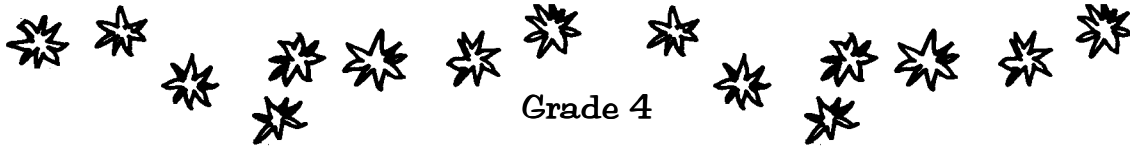


Magic Math



- The Queen of the Night was giving her annual presents to her attendants. She had three boxes, each with eight gifts inside. If there were twenty attendants, how many gifts were left over?
- In the course of his initiation, Tamino had to perform eighteen tasks. Each of these tasks took 17 minutes to complete. How long, in hours and minutes, did it take Tamino to complete all of the tasks in the initiation?
- Exam scores at the Magic Academy just came in. The four students taking alchemy received scores of 90, 85, 88, and 93. What was the average score on the alchemy exam?
- Papageno and Papagena were having a pie for dessert. If Papageno had $\frac{3}{8}$ of the pie, and Papagena had $\frac{2}{8}$ of the pie, how much of the pie was left over for dessert the next day?
- Papageno likes to play music with his bells while he travels. He has five bells, each sounding a different note. If he wants to take two bells with him on a particular journey, how many different combinations of bells can he bring?
- Papageno and Tamino each had a garden in their backyard. Each garden had the same perimeter, 24 feet, but Papageno's garden was square, while Tamino's was a rectangle, 2 feet wide. How long was Tamino's garden? Who had the most area in their garden?
- The subjects of the Queen of the Night were electing a prime minister. One hundred citizens voted for four candidates: Pilastro, Alana, Nostramo, and Wilhelmina. If one fifth of the votes were for Pilastro, ten of the votes were for Alana, and one tenth of those who didn't vote for Pilastro or Alana voted for Nostramo, how many votes did Wilhelmina receive?
- There are four hundred and seventy-three spirits in the castle of the Queen of the Night, and each has 72 stories to tell. If one listened to each story from each spirit, how many stories would one hear in all?
- Six students, Alexander, Beatrice, Claire, Dulcinea, Ernest, and Franklin, are learning to tame six animals, a dragon, a werewolf, an emu, a lemur, a tiger, and a snake.

Determine which animal each student is learning to tame from the following clues:

- Dulcinea and Beatrice can't tame birds, and Dulcinea can't tame werewolves.
- Alexander's creature ends in an 'r.'
- Snakes and lemurs can only be tamed by a boy, while werewolves and tigers are best tamed by girls (but not by Claire).
- Ernest's animal ends in a consonant.

	Dragon	W-wolf	Emu	Lemur	Tiger	Snake
Alexander						
Beatrice						
Claire						
Dulcinea						
Ernest						
Franklin						

Magic Math



- Students' alchemy scores on the last exam at Magic Academy were 93, 79, 82, 61, 93, 84, and 78. What was the average alchemy exam score, to the nearest tenth of a point?
- Three attendants to the Queen of the Night are making a healing salve. If the first attendant adds $\frac{3}{5}$ of a gallon of sea foam, the second adds $\frac{1}{3}$ of a gallon of lilac water, and a third adds $\frac{5}{6}$ of a gallon of liquefied magic, what is the total volume of the salve?
- Ten thieves steal some gold pieces from a dragon's horde. They divide the loot evenly. That evening, six of them conspire and take all the gold pieces, again dividing the loot evenly. The next day, the other four catch up with the double-crossers, take all of the gold back, and divide it evenly. What is the minimal number of gold pieces the band could have originally stolen?
- In the realm of the Queen of the Night, the citizens are electing a prime minister. There are 360 votes in all, divided among Pilastro, Nostramo, and Wilhelmina. If Pilastro receives 17.5% of the vote, and Nostramo receives 112 votes, how many votes does Wilhelmina receive?
- As part of his initiation, Tamino must determine the combination on a magic lock. He knows the combination's numbers follow a pattern, and has found the first five numbers to be 1, 5, 10, 16, and 23. What is the sixth and last number in the combination?
- There are four hundred and ninety-eight districts in Papageno's homeland. In each district there are twenty-seven neighborhoods and in each neighborhood 144 residents. How many residents would be in each neighborhood if the land were divided into 32 districts, each with 27 neighborhoods?
- As another part of Tamino's initiation, he had to determine the length of a rectangle which had width 33.18 cm, knowing that its area was the same as that of a rectangle measuring 13.86 cm by 41.08 cm. Did he have enough information? If so, what was the height?
- Six students, Alexander, Beatrice, Claire, Dulcinea, Ernest, and Franklin, are learning to tame six animals, a dragon, a werewolf, an emu, a lemur, a tiger, and a snake. Determine which animal each student is learning to tame from the following clues:

- Dulcinea and Beatrice can't tame birds, and Dulcinea can't tame werewolves.
 - Alexander's creature ends in an 'r.'
 - Snakes and lemurs can only be tamed by a boy, while werewolves and tigers are best tamed by girls (but not by Claire).
 - Ernest's animal ends in a consonant.
- Magic Math

	Dragon	Werewolf	Emu	Lemur	Tiger	Snake
Alexander						
Beatrice						
Claire						
Dulcinea						
Ernest						
Franklin						

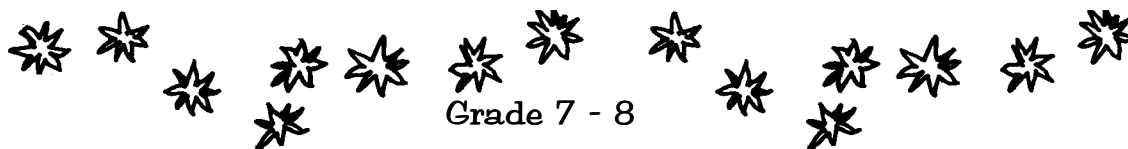
Magic Math



1. Tamino and Papageno required that their gardens be of exactly equal area. Papageno's garden was 10.03 feet long and 17.496 feet wide. If Tamino's garden had to be only 4.131 feet wide, how long must it have been?
2. Sarastro is a great fan of reading. He spends sixty florins on books for each 100 florins he spends on other interests. If Sarastro spends 255 florins on books in one month, how much money must he have spent on all of his interests combined?
3. One of Tamino's initiation rituals is to find the combination of a magic lock. He knows that the numbers of the combination form a pattern, and that the first four numbers are 5, 14, 30, and 55. What are the next two numbers of the combination?
4. There is stiff competition to become an attendant to the Queen of the Night. There are three days of tryouts. On the first day, 45% of the 400 applicants are accepted. On the second, 15% of the 300 applicants are taken, and on the final day, 22% of 600 applicants are chosen. What is the overall acceptance rate over the three days, to the nearest percentage point?
5. Fifteen thieves steal some gold pieces from a dragon's horde. They divide the loot evenly. That evening, six of them conspire and take all the gold pieces, again dividing the loot evenly. The next day, the other nine catch up with the double-crossers, take all of the gold back, and divide it evenly. What is the minimal number of gold pieces the band could have originally stolen?
6. Six students, Alexander, Beatrice, Claire, Dulcinea, Ernest, and Franklin, are learning to tame animals. Each is learning to play one instrument to tame one animal. Determine which animal each student is taming, and with which instrument:
 - The bell player has a knack for taming birds.
 - Ernest's animal's name has an 'r' at the end.
 - Werewolves are usually tamed by a drum.
 - Dulcinea plays harmonica.
 - Franklin plays an 'H' instrument.
 - Alexander needs his lungs to play his instrument.
 - Ernest doesn't care much for lemurs.
 - Flutes and harps don't work on dragons, and flutes don't work on lemurs.
 - Lemurs like neither harps nor harmonicas. They don't like Frank, either.
 - Neither Claire nor Dulcinea has much luck with werewolves.

	Dragon	Werewolf	Emu	Lemur	Tiger	Snake	Bells	Harp	Harmonica	Flute	Drum	Oboe
Alexander												
Beatrice												
Claire												
Dulcinea												
Ernest												
Franklin												
Bells												
Harp												
Harmonica												
Flute												
Drum												
Oboe												

Magic Math



1. A band of seven thieves robs a dragon's horde of gold pieces, and divides the loot evenly. That evening, a gang of twenty-five rascals steals the gold, and also divides the loot evenly. The next day, a society of forty-five crooks robs the rascals. They, too, divide the loot evenly. What is the smallest number of gold pieces that could have been thrice stolen?
2. One of Tamino's initiation rituals is to find the combination of a magic lock. He knows that the numbers of the combination form a pattern, and that the first four numbers are 5, 14, 30, and 55. What are the last two numbers of the seven-number combination?
3. Spirits are required to take classes in haunting, helping, and hiding. Thirty-four spirits are taking classes presently, with 23 taking more than one class. If the sum of the three classes' enrollments is 64, 16 students take hiding, and 9 students take both helping and haunting, how many students take only hiding?
4. There is stiff competition to become an attendant to the Queen of the Night. There are three days of tryouts. On the first day, 45% of the 400 applicants are accepted. On the second, 15% of the 300 applicants are taken, and on the final day, 22% of 600 applicants are chosen. What is the overall acceptance rate over the three days, to the nearest percentage point?
5. The Magic Music Shop repairs broken bells. The cost is 72 florins, plus 4.5 florins per bell fixed. How much does it cost Papageno to have all 329 of his bells repaired?
6. Six students, Alexander, Beatrice, Claire, Dulcinea, Ernest, and Franklin, are learning to tame animals. Each is learning to play one instrument to tame one animal. Determine which animal each student is taming, and with which instrument:

- The bell player has a knack for taming birds.
- Lemurs like neither harps Dulcinea has much luck with werewolves.
- Ernest's animal's name has an 'r' at the end.
- Werewolves are usually tamed by a drum.
- Alexander needs his lungs to play his instrument.
- Ernest doesn't care much for lemurs.
- Neither Claire nor Dulcinea has much luck with werewolves.
- Franklin plays an 'H' instrument.
- Flutes and harps don't work on dragons, and flutes don't work on lemurs.
- Dulcinea plays harmonica.

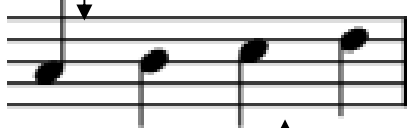
	Dragon	Werewolf	Emu	Lemur	Tiger	Snake	Bells	Harp	Harmonica	Flute	Drum	Oboe
Alexander												
Beatrice												
Claire												
Dulcinea												
Ernest												
Franklin												
Bells												
Harp												
Harmonica												
Flute												
Drum												
Oboe												

COUNT IT OUT!


Have you ever wondered how musicians know when to come in and for how long to sing or play their notes? The answer is a simple system known as “mensural notation.” Invented in the 13th century, this notation helps composers express the rhythm and timing of their music on paper in the form of different **notes**, each of which represents a different unit of time.

You too can learn how to read the rhythm of music! All you need is a pencil, a sharp mind, and knowledge of how to add and subtract fractions.




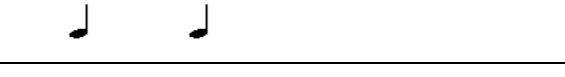






This is a **quarter note**. You can tell because the circle is filled in with black, and the line that comes off of the circle is straight.



There are **4 quarter notes** in this **measure**. Given that each quarter note is worth $\frac{1}{4}$, these four notes together must equal **1**.



Quarter notes, however, are not the only notes used in music. There are many other notes that composers often use, each of which represents a different fraction. The 4 most common note-lengths are whole notes, half notes, eighth notes, and sixteenth notes. They look like this:

Name	Note	
Whole Note		
Half Note		
Quarter Note		
Eighth Note		$\frac{1}{2}$ 
Sixteenth Note		$\frac{1}{4}$ 

NOW IT'S YOUR TURN!

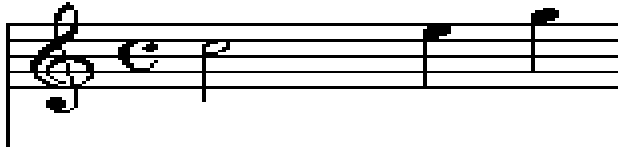
Look at the following measures. First, under each note write what fraction it represents. Then add up the values of each of the notes to determine how many beats are in each phrase.

EXAMPLE:

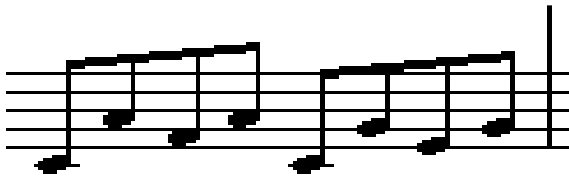


$\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ = 1.25 Beats

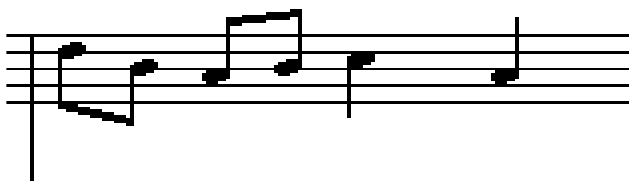
Allegro



_____ = _____ Beats



_____ = _____ Beats



_____ = _____ Beats



_____ = _____ Beats

Membership Math

Study the information on the chart to answer the questions on this page.

It can cost a lot of money to run an arts organization. Some costs are covered by ticket sales, but that is not enough. Many people help support arts organizations by donating money. In addition to the knowledge that they help make the arts possible, donors receive certain privileges. The chart below shows some of the privileges of becoming a donor at Boston Lyric Opera.

Privileges of Support

Friend	X									
Overture Circle	X	X								
Aria Circle	X	X	X							
Opera Circle	X	X	X	X						
Impresario	X	X	X	X	X					
Patron Circle	X	X	X	X	X	X				
Encore Circle	X	X	X	X	X	X	X			
Benefactors' Circle	X	X	X	X	X	X	X	X		
General Director's Circle	X	X	X	X	X	X	X	X	X	
President's Circle	X	X	X	X	X	X	X	X	X	X
Chairman's Circle	Privileges designed to reflect donor's interests									

- | | | | |
|---------------------------------|-----------------------------|---------------------------------|------------------------|
| 1 BLO Newsletter | 4 Invitation to Gala | 7 Dress Rehearsal Passes | 10 Opera Travel |
| 2 Early Notice of Events | 5 Season Preview | 8 Attend Cast Party | |
| 3 Name in Program Book | 6 Opera Class | 9 Attend Rehearsal | |

- What is your level of support if you receive seven privileges?

- How many privileges does a donor in the Benefactor's Circle receive?

- An invitation to the gala is the top privilege of which level of support?

- If you are currently in the Overture Circle, how many more privileges would you receive if you became a member of the Patron Circle?

- If you wanted to travel to a famous opera house, what would your level of support have to be?

- Which circle has 3 more privileges than the Aria Circle?

- Which level of support receives a specially designed set of privileges?

- What would you want as your privileges if you were a member of this group?

Get your tickets here!

Use the chart below to answer the questions on this page.

The chart below shows ticket prices for a Boston Lyric Opera production in the 2007-2008 Season. Notice that some of the prices are higher than others. Higher priced seats are usually closer to the stage. Audience members pay more for these seats because they can see and hear the singers more clearly.

Ticket Prices

Location of Seat	Friday	Sunday	Tuesday and Wed.
Dress Circle	\$ 121.00	\$ 126.00	\$ 121.00
A-Orchestra and A-Mezzanine	\$ 112.00	\$ 119.00	\$ 100.00
B-Orchestra and B-Mezzanine	\$ 73.00	\$ 83.00	\$ 64.00
C-Mezzanine and C-Balcony	\$ 50.00	\$ 54.00	\$ 47.00
D-Balcony	\$ 34.00	\$ 36.00	\$ 33.00

Boston Lyric Opera performs at the Citi Shubert Theatre in Boston, Massachusetts. Check out the seating chart below to see exactly where these seats are located in the theatre!

1. What is the day and location of the ticket that costs \$83.00?

2. If you want a B-Orchestra ticket for a Tuesday performance, how much will you spend?

3. How much will you spend if you buy the following:
 2 Friday Dress Circle
 1 Tuesday B-Mezzanine
 1 Sunday C-Balcony

4. On Sunday, what is the price difference between an A-Orchestra and a B-Orchestra ticket?

5. Between a B-Mezzanine and a C-Mezzanine ticket?

6. Where are the most affordable seats in the theatre located?

7. What does the highest priced ticket cost?

8. The lowest priced ticket?

9. What is the difference in price between the highest and lowest priced tickets?



On with the show!

Boston Lyric Opera subscribers can purchase a series of tickets that includes three performances. The chart below shows performance dates and times for each of Boston Lyric Opera's 2007-2008 season productions.

Boston Lyric Opera Performance Schedule

	<i>La bohème</i>	<i>L'elisir d'amore</i>	<i>The Abduction from the Seraglio</i>
Friday Opening	Fri., November 2, 2007 7:30 p.m.	Fri., March 14, 2008 7:30 p.m.	Fri., April 5, 2008 7:30 p.m.
Sunday Matinee	Sun., November 4, 2007 3:00 p.m.	Sun., March 16, 2008 3:00 p.m.	Sun., April 7, 2008 3:00 p.m.
Wednesday	Wed., November 7, 2007 7:30 p.m.	Wed., March 19, 2008 7:30 p.m.	Wed., April 4, 2008 7:30 p.m.
Friday Encore	Fri., November 9, 2007 7:30 p.m.	Fri., March 21, 2008 7:30 p.m.	Fri., May 2, 2008 7:30 p.m.
Sunday Encore	Sun., November 11, 2007 3:00 p.m.	Sun., March 23, 2008 3:00 p.m.	Sun., May 4, 2008 3:00 p.m.
Tuesday	Tues., November 13, 2007 7:30 p.m.	Tues., March 25, 2008 7:30 p.m.	Tues., May 6, 2008 7:30 p.m.

How many performances on the chart do NOT take place on a weekday?

- What is the date of the first performance of the 2007/2008 Season? Which opera is it?

- What is the day, date, and time of the *Abduction from the Seraglio* performance in the Friday Encore series?

- Which two series are good choices for a subscriber who prefers not to travel at night?

- In the Friday Opening series, how many days will pass between the performances of *L'elisir d'amore* and *The Abduction from the Seraglio*?

- Which opera has a performance on Veterans Day? Easter?

- If you attend a 7:30 p.m. production of *L'elisir d'amore* and the performance lasts 2½ hours, what time will you leave the theatre?

- What is the name, date, and time of the second production in the Friday Encore series?

- What opera will you see if you are at the theatre on Friday, May 2 at 7:30 p.m.?
