Halloween Math Worksheets

16 printable worksheets for kindergarten through high school, each with an answer key. Counting and addition for little ones, riddles and fractions for grades 3 to 5, integers, percents and a mystery picture for middle school, and quadratics, probability and exponential growth for high school.

#	Worksheet	Level	Skill
1	Count the Pumpkins	Grades K-2	Counting to 15
2	Candy Addition	Grades K-2	Addition within 20
3	Spooky Subtraction	Grades K-2	Subtraction within 20
4	Bat Comparisons	Grades K-2	Comparing numbers and skip counting
5	Monster Multiplication	Grades 3-5	Multiplication facts to 12 × 12
6	Trick-or-Treat Division	Grades 3-5	Division with remainders
7	Pumpkin Pie Fractions	Grades 3-5	Fractions of a shape and of a set
8	Haunted House Riddle	Grades 3-5	Multi-digit addition and subtraction
9	Graveyard Integers	Grades 6-8	Operations with integers
10	Costume Shop Sale	Grades 6-8	Percent discounts, tax and percent change
11	Equation Escape Room	Grades 6-8	One-step and two-step equations
12	Mystery Picture Plot	Grades 6-8	Coordinates in all four quadrants
13	Haunted House Systems	High School	Systems of linear equations
14	Pumpkin Launch	High School	Quadratic functions and the quadratic formula
15	Candy Bag Probability	High School	Probability and expected value
16	Zombie Outbreak	High School	Exponential growth and decay with logarithms

Print
Print on US Letter or A4 with "Fit to page" turned on. Black and white works fine.

Answer keys
Every worksheet has a matching answer key, starting on page 18.

Timing
Each sheet takes about 15 to 25 minutes. The riddle and picture sheets work well for early finishers.

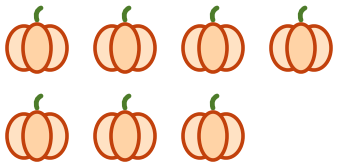
Sharing
Free to print and share with your class, homeschool group or family. Please link to the page instead of reselling the files.

Count the Pumpkins

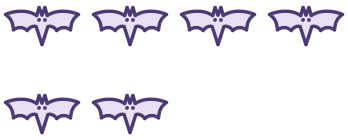
Grades K-2

Count the pictures in each box. Write the number on the line.

Name _____ Date _____



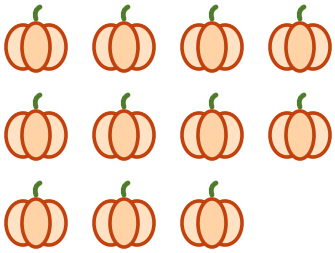
How many? _____



How many? _____

How many? _____

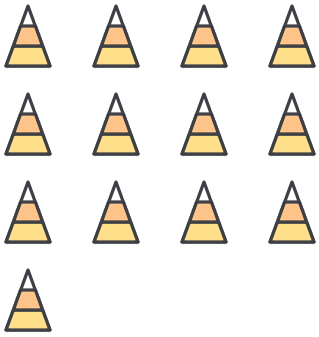
How many? _____



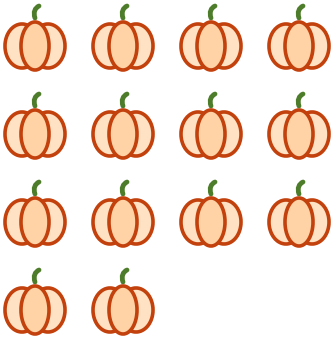
How many? _____

How many? _____

How many? _____



How many? _____



How many? _____

Candy Addition

Grades K-2

Add the candy corn in each row. Then solve the addition problems.

Name _____ Date _____

Part A: Add the pictures

+ = ____

+ = ____

+ = ____

+ = ____

Part B: Add

1. 3 + 4 = ____
2. 11 + 8 = ____
3. 4 + 7 = ____
4. 12 + 6 = ____
5. 11 + 4 = ____
6. 3 + 1 = ____
7. 8 + 3 = ____
8. 12 + 7 = ____
9. 9 + 9 = ____
10. 7 + 8 = ____
11. 7 + 7 = ____
12. 7 + 2 = ____
13. 10 + 5 = ____
14. 4 + 1 = ____
15. 8 + 2 = ____
16. 6 + 7 = ____

Spooky Subtraction

Grades K-2

The crossed-out ghosts flew away. How many are left? Then solve the problems.

Name _____ Date _____

Part A: How many ghosts are left?

4 − 3 = _____

5 − 2 = _____

5 − 1 = _____

8 − 2 = _____

Part B: Subtract

1. 7 − 2 = _____
2. 14 − 4 = _____
3. 19 − 2 = _____
4. 17 − 1 = _____
5. 9 − 6 = _____
6. 12 − 9 = _____
7. 7 − 3 = _____
8. 15 − 9 = _____
9. 9 − 4 = _____
10. 13 − 8 = _____
11. 16 − 11 = _____
12. 14 − 3 = _____
13. 14 − 10 = _____
14. 15 − 1 = _____
15. 19 − 7 = _____
16. 17 − 3 = _____

Bat Comparisons

Grades K-2

Write <, > or = between the numbers. Then fill in the missing numbers.

Name _____ Date _____

Part A: Compare the numbers

1. 3 ◯ 16
2. 2 ◯ 3
3. 45 ◯ 50
4. 23 ◯ 23
5. 6 ◯ 0
6. 46 ◯ 42
7. 4 ◯ 18
8. 12 ◯ 23
9. 17 ◯ 17
10. 15 ◯ 46
11. 33 ◯ 22
12. 42 ◯ 49

Part B: Skip count

Count by 2s: 4 6 ____ 10 12 ____ ____ 18

Count by 5s: 10 15 ____ ____ 30 ____ 40 45

Count by 10s: 30 40 50 60 ____ ____ ____ 100

Monster Multiplication

Grades 3-5

Solve each multiplication fact. Try to finish all 40 in 5 minutes.

Name _____ Date _____

1. 2 × 2 = ____
2. 8 × 9 = ____
3. 6 × 8 = ____
4. 11 × 12 = ____
5. 10 × 3 = ____
6. 9 × 6 = ____
7. 11 × 9 = ____
8. 11 × 4 = ____
9. 7 × 11 = ____
10. 6 × 3 = ____
11. 5 × 12 = ____
12. 7 × 2 = ____
13. 10 × 5 = ____
14. 7 × 5 = ____
15. 11 × 6 = ____
16. 8 × 12 = ____
17. 5 × 8 = ____
18. 3 × 4 = ____
19. 10 × 2 = ____
20. 11 × 5 = ____
21. 8 × 2 = ____
22. 12 × 6 = ____
23. 5 × 5 = ____
24. 6 × 7 = ____
25. 7 × 8 = ____
26. 5 × 6 = ____
27. 8 × 4 = ____
28. 12 × 7 = ____
29. 3 × 9 = ____
30. 9 × 4 = ____
31. 9 × 7 = ____
32. 4 × 12 = ____
33. 2 × 9 = ____
34. 11 × 2 = ____
35. 11 × 8 = ____
36. 10 × 8 = ____
37. 10 × 6 = ____
38. 3 × 8 = ____
39. 3 × 11 = ____
40. 6 × 4 = ____

Trick-or-Treat Division

Grades 3-5

Read each problem. Divide, then write the remainder.

Name _____ Date _____

1. Lily has 33 pieces of candy to share equally among 7 trick-or-treaters. How many does each get, and how many are left over?

   Each gets _____ Left over _____

2. Sofia has 78 glow sticks to share equally among 9 friends. How many does each get, and how many are left over?

   Each gets _____ Left over _____

3. Aarav has 46 mini pumpkins to share equally among 8 tables. How many does each get, and how many are left over?

   Each gets _____ Left over _____

4. Leo has 63 stickers to share equally among 6 classmates. How many does each get, and how many are left over?

   Each gets _____ Left over _____

5. Emma has 52 caramel apples to share equally among 8 trays. How many does each get, and how many are left over?

   Each gets _____ Left over _____

6. Maya has 22 spider rings to share equally among 4 party bags. How many does each get, and how many are left over?

   Each gets _____ Left over _____

7. Zara has 25 chocolate bars to share equally among 6 cousins. How many does each get, and how many are left over?

   Each gets _____ Left over _____

8. Noah has 91 candy corns to share equally among 8 jars. How many does each get, and how many are left over?

   Each gets _____ Left over _____

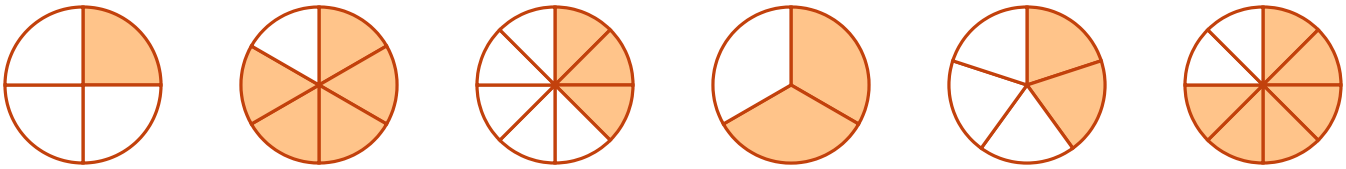
Pumpkin Pie Fractions

Grades 3-5

Write the fraction of each pie that is shaded. Then find the fraction of each group.

Name _____ Date _____

Part A: What fraction is shaded?



_____ _____ _____ _____ _____ _____

Part B: Fraction of a group

1. Aarav says 1/3 of his 24 candies are lollipops. How many is that?

   Answer: _____

2. Zara says 3/4 of her 28 candies are chocolate. How many is that?

   Answer: _____

3. Omar says 2/5 of the 35 pumpkins on the farm are white. How many is that?

   Answer: _____

4. Nora says 5/6 of her 42 decorations are bats. How many is that?

   Answer: _____

5. Arjun says 3/8 of the 48 cupcakes have orange frosting. How many is that?

   Answer: _____

6. Maya says 2/3 of the 27 costumes in the shop are capes. How many is that?

   Answer: _____

Haunted House Riddle

Grades 3-5

Solve each problem, find the answer in the code box and write its letter.
Then spell out the answer to the riddle.

Name _____ Date _____

What room does a ghost always stay out of?

1,305 = I **1,572** = L **1,574** = G **2,015** = F **2,839** = V **3,370** = R **3,639** = A
3,669 = O **4,154** = N **4,393** = M **4,811** = H **5,175** = E **5,533** = D **8,281** = T
8,458 = B **9,128** = C

1. 5,081 + 3,200 = _____ ___
2. 5,304 − 493 = _____ ___
3. 5,666 − 491 = _____ ___
4. 4,285 − 2,713 = _____ ___
5. 595 + 710 = _____ ___
6. 6,116 − 3,277 = _____ ___
7. 968 + 337 = _____ ___
8. 2,104 + 2,050 = _____ ___
9. 1,032 + 542 = _____ ___
10. 6,066 − 2,696 = _____ ___
11. 3,362 + 307 = _____ ___
12. 1,176 + 2,493 = _____ ___
13. 927 + 3,466 = _____ ___

1	2	3	4	5	6	7	8	9	10	11	12	13
___	___	___	___	___	___	___	___	___	___	___	___	___

Graveyard Integers

Grades 6-8

Add, subtract, multiply and divide. Watch the signs.

Name _____ Date _____

Part A: Compute

1. $-15 - 4 =$ _____
2. $-1 - 8 =$ _____
3. $(-9) \times (-7) =$ _____
4. $7 \times (-1) =$ _____
5. $-44 \div 11 =$ _____
6. $12 + (-11) =$ _____
7. $-15 + (-10) =$ _____
8. $(-5) \times (-5) =$ _____
9. $(-13) \times 3 =$ _____
10. $(-3) \times 9 =$ _____
11. $-7 + 1 =$ _____
12. $-81 \div (-9) =$ _____
13. $-14 + 5 =$ _____
14. $24 \div (-8) =$ _____
15. $-2 - 3 =$ _____
16. $-8 - 8 =$ _____
17. $24 \div (-4) =$ _____
18. $-8 - 6 =$ _____
19. $5 \div (-5) =$ _____
20. $4 + (-6) =$ _____

Part B: Word problems

21. At 9 PM the graveyard was 4°F. By 3 AM the temperature had dropped 9 degrees. What was the temperature at 3 AM?

    Answer: _____

22. By sunrise, the temperature from problem 21 rose 4 degrees. What was the temperature at sunrise?

    Answer: _____

23. A bat roosts 13 feet below the cave entrance, at −13 feet. It flies up 9 feet. Where is it now?

    Answer: _____

24. A haunted elevator starts on floor 6, goes down 9 floors, then up 4 floors. Which floor is it on?

    Answer: _____

Costume Shop Sale

Grades 6-8

Use percents to work out each price. Show your work in the space.

Name _____ Date _____

1. A witch costume costs $36.00. It is 25% off. What is the sale price?

   Answer: _____

2. A vampire cape was $48.00 and is now $30.00. What percent is the discount?

   Answer: _____

3. Face paint costs $22.50 before an 8% sales tax. What is the total?

   Answer: _____

4. A mask costs $40.00. The shop takes 20% off, then an extra 10% off the new price. What do you pay?

   Answer: _____

5. Is the deal in problem 4 the same as 30% off? Explain in one sentence.

   Answer: _____

6. A bag of candy cost $4.00 last year and $5.00 this year. What is the percent increase?

   Answer: _____

7. A pumpkin patch sold 360 pumpkins. 15% were white. How many white pumpkins were sold?

   Answer: _____

8. 27 of the 36 students in a class wore costumes. What percent is that?

   Answer: _____

Equation Escape Room

Grades 6-8

Solve each equation for x. Find x in the code box and write its letter. The letters answer the riddle.

Name _____ Date _____

What is a vampire's favorite fruit?

−8 = C **−6** = I **−5** = R **1** = E **2** = T **3** = D **4** = F **7** = B **8** = A **9** = N **10** = H **11** = K

1. $-2x + 9 = -7$ x = _____ ___
2. $-3x + 9 = -18$ x = _____ ___
3. $6x + 1 = 8x - 1$ x = _____ ___
4. $2x + 12 = -4$ x = _____ ___
5. $4(x + 5) = 28$ x = _____ ___
6. $-2(x + 11) = -38$ x = _____ ___
7. $-2(x + 4) = 2$ x = _____ ___
8. $x/3 + 9 = 7$ x = _____ ___
9. $3x - 12 = 15$ x = _____ ___
10. $-2x + 11 = 9$ x = _____ ___

1	2	3	4	5	6	7	8	9	10

Mystery Picture Plot

Grades 6-8

Plot each point on the grid and connect them in order with straight lines.

Name _____ Date _____

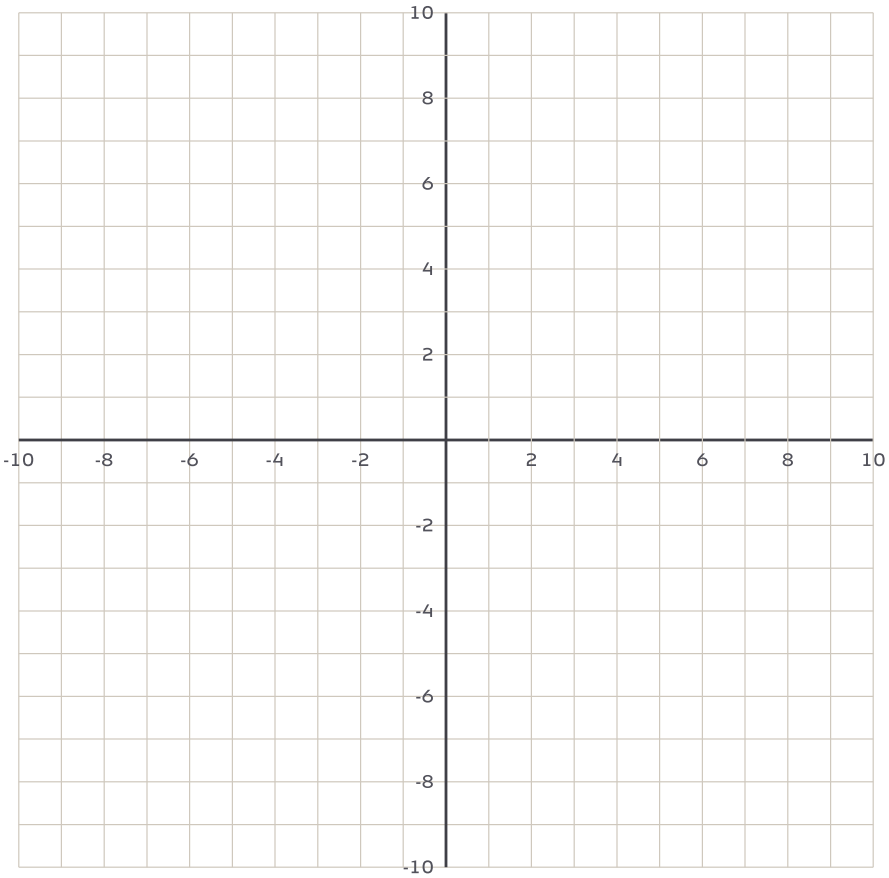
Connect these points in order:

(0, 2)	(1, 4)
(2, 2)	(4, 3)
(6, 5)	(9, 6)
(8, 3)	(9, 1)
(7, 0)	(6, −2)
(4, −1)	(2, −3)
(0, −5)	(−2, −3)
(−4, −1)	(−6, −2)
(−7, 0)	(−9, 1)
(−8, 3)	(−9, 6)
(−6, 5)	(−4, 3)
(−2, 2)	(−1, 4)
(0, 2)	

Then plot two dots for the eyes: (−1, 1) and (1, 1)

What did you draw?

_____



Quadrant check

Pick one point from the list for each quadrant.

Quadrant I: _____ Quadrant II: _____

Quadrant III: _____ Quadrant IV: _____

Any point from the list in the right quadrant is correct. Points on an axis, like (0, 2), are not in any quadrant.

Haunted House Systems

High School

Write a system of two equations for each problem, then solve it.

Name _____ Date _____

1. A haunted house sold 180 tickets for $1,864. Adult tickets cost $12 and child tickets cost $8. How many of each were sold?

   Answer: _____

2. Three chocolate bars and two lollipops cost $24. One chocolate bar and four lollipops cost $18. Find the price of each (whole dollars).

   Answer: _____

3. A witch mixes a 10% potion with a 40% potion to make 6 liters of a 20% potion. How many liters of each did she use?

   Answer: _____

4. A ghost ship sails 24 miles downstream in 3 hours and 6 miles back upstream in 3 hours. Find the speed of the ship in still water and the speed of the current.

   Answer: _____

5. Solve the system: $2x + 3y = -1$ and $x - y = -8$.

   Answer: _____

6. Solve the system: $5x - 2y = 22$ and $3x + 4y = 8$.

   Answer: _____

Pumpkin Launch

High School

A catapult launches pumpkins. Height h is in feet and time t is in seconds. Round to 2 decimal places where needed.

Name _____ Date _____

	Height model	Time to top	Maximum height	Time to land
Launch A	$h(t) = -16t^2 + 64t + 6$	_____	_____	_____
Launch B	$h(t) = -16t^2 + 80t + 4$	_____	_____	_____
Launch C	$h(t) = -16t^2 + 96t + 10$	_____	_____	_____

Hint: the top of the arc is at $t = -b/(2a)$. The pumpkin lands when $h(t) = 0$.

Work space

4. Which launch stays in the air longest? How much longer than Launch A?

   Answer: _____

5. For Launch A, when is the pumpkin exactly 54 feet high? Give both times.

   Answer: _____

Candy Bag Probability

High School

Give each answer as a fraction in lowest terms unless the question asks for a count.

Name _____ Date _____

A trick-or-treat bag holds 6 chocolate bars, 4 lollipops, 5 gummy worms, 3 caramels. That is 18 candies in all. You pull candies without looking.

1. What is the probability of pulling a chocolate bar?

   Answer: _____

2. What is the probability of not pulling a gummy worm?

   Answer: _____

3. You pull one candy, eat it, then pull another. What is the probability both are chocolate bars?

   Answer: _____

4. You pull a candy, put it back, and pull again. What is the probability of a lollipop and then a caramel?

   Answer: _____

5. If you pull a candy and put it back 90 times, about how many lollipops would you expect?

   Answer: _____

6. A spinner pays 3 candies on 1/4 of spins, 1 candy on 1/2 of spins and 0 candies otherwise. What is the expected number of candies per spin?

   Answer: _____

Zombie Outbreak

High School

A zombie outbreak starts with 5 zombies, and the number doubles every 3 hours: $N(t) = 5 \cdot 2^{(t/3)}$, where t is in hours.

Name _____ Date _____

Part A: Complete the table

Hours	t = 0	t = 3	t = 6	t = 12	t = 18
Zombies	_____	_____	_____	_____	_____

Part B: Solve

2. After how many hours are there exactly 1,280 zombies?

   Answer: _____

3. After how many hours are there 1,000 zombies? Round to one decimal place.

   Answer: _____

4. A second town grows linearly: $L(t) = 5 + 40t$. Which town has more zombies at t = 12? At t = 24?

   Answer: _____

5. A cure potion starts at 80% strength and loses half its strength every 5 days. What is its strength after 15 days?

   Answer: _____

6. When does the potion first drop to 5% strength?

   Answer: _____

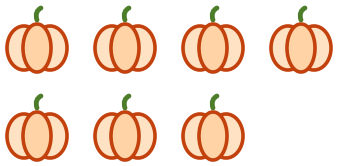
Count the Pumpkins

Answer key

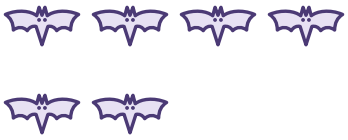
Grades K-2

Count the pictures in each box. Write the number on the line.

Name _____ Date _____



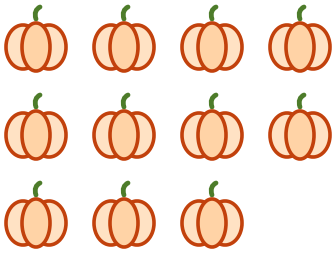
How many? 7



How many? 6

How many? 9

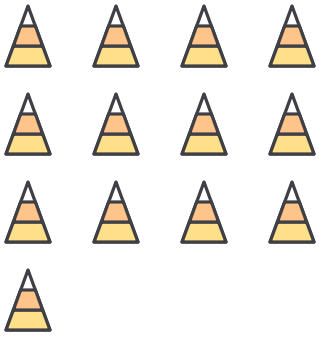
How many? 4



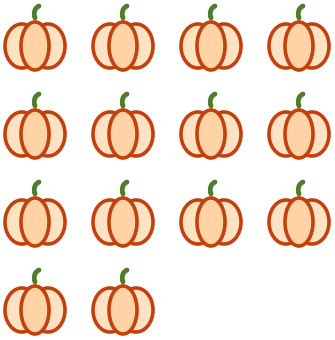
How many? 11

How many? 3

How many? 12



How many? 13



How many? 14

Candy Addition Answer key

Grades K-2

Add the candy corn in each row. Then solve the addition problems.

Name _____ Date _____

Part A: Add the pictures

+ = 4

+ = 6

+ = 6

+ = 5

Part B: Add

1. 3 + 4 = 7
2. 11 + 8 = 19
3. 4 + 7 = 11
4. 12 + 6 = 18
5. 11 + 4 = 15
6. 3 + 1 = 4
7. 8 + 3 = 11
8. 12 + 7 = 19
9. 9 + 9 = 18
10. 7 + 8 = 15
11. 7 + 7 = 14
12. 7 + 2 = 9
13. 10 + 5 = 15
14. 4 + 1 = 5
15. 8 + 2 = 10
16. 6 + 7 = 13

Spooky Subtraction Answer key

Grades K-2

The crossed-out ghosts flew away. How many are left? Then solve the problems.

Name _____ Date _____

Part A: How many ghosts are left?

4 − 3 = **1**

5 − 2 = **3**

5 − 1 = **4**

8 − 2 = **6**

Part B: Subtract

1. 7 − 2 = **5**
2. 14 − 4 = **10**
3. 19 − 2 = **17**
4. 17 − 1 = **16**
5. 9 − 6 = **3**
6. 12 − 9 = **3**
7. 7 − 3 = **4**
8. 15 − 9 = **6**
9. 9 − 4 = **5**
10. 13 − 8 = **5**
11. 16 − 11 = **5**
12. 14 − 3 = **11**
13. 14 − 10 = **4**
14. 15 − 1 = **14**
15. 19 − 7 = **12**
16. 17 − 3 = **14**

Bat Comparisons Answer key

Grades K-2

Write <, > or = between the numbers. Then fill in the missing numbers.

Name _____ Date _____

Part A: Compare the numbers

1. 3 < 16
2. 2 < 3
3. 45 < 50
4. 23 = 23
5. 6 > 0
6. 46 > 42
7. 4 < 18
8. 12 < 23
9. 17 = 17
10. 15 < 46
11. 33 > 22
12. 42 < 49

Part B: Skip count

Count by 2s:	4	6	**8**	10	12	**14**	**16**	18
Count by 5s:	10	15	**20**	**25**	30	**35**	40	45
Count by 10s:	30	40	50	60	**70**	**80**	**90**	100

Monster Multiplication Answer key

Grades 3-5

Solve each multiplication fact. Try to finish all 40 in 5 minutes.

Name _____ Date _____

1. 2 × 2 = **4**
2. 8 × 9 = **72**
3. 6 × 8 = **48**
4. 11 × 12 = **132**
5. 10 × 3 = **30**
6. 9 × 6 = **54**
7. 11 × 9 = **99**
8. 11 × 4 = **44**
9. 7 × 11 = **77**
10. 6 × 3 = **18**
11. 5 × 12 = **60**
12. 7 × 2 = **14**
13. 10 × 5 = **50**
14. 7 × 5 = **35**
15. 11 × 6 = **66**
16. 8 × 12 = **96**
17. 5 × 8 = **40**
18. 3 × 4 = **12**
19. 10 × 2 = **20**
20. 11 × 5 = **55**
21. 8 × 2 = **16**
22. 12 × 6 = **72**
23. 5 × 5 = **25**
24. 6 × 7 = **42**
25. 7 × 8 = **56**
26. 5 × 6 = **30**
27. 8 × 4 = **32**
28. 12 × 7 = **84**
29. 3 × 9 = **27**
30. 9 × 4 = **36**
31. 9 × 7 = **63**
32. 4 × 12 = **48**
33. 2 × 9 = **18**
34. 11 × 2 = **22**
35. 11 × 8 = **88**
36. 10 × 8 = **80**
37. 10 × 6 = **60**
38. 3 × 8 = **24**
39. 3 × 11 = **33**
40. 6 × 4 = **24**

Trick-or-Treat Division Answer key

Grades 3-5

Read each problem. Divide, then write the remainder.

Name _____ Date _____

1. Lily has 33 pieces of candy to share equally among 7 trick-or-treaters. How many does each get, and how many are left over?

   Each gets **4** Left over **5**

2. Sofia has 78 glow sticks to share equally among 9 friends. How many does each get, and how many are left over?

   Each gets **8** Left over **6**

3. Aarav has 46 mini pumpkins to share equally among 8 tables. How many does each get, and how many are left over?

   Each gets **5** Left over **6**

4. Leo has 63 stickers to share equally among 6 classmates. How many does each get, and how many are left over?

   Each gets **10** Left over **3**

5. Emma has 52 caramel apples to share equally among 8 trays. How many does each get, and how many are left over?

   Each gets **6** Left over **4**

6. Maya has 22 spider rings to share equally among 4 party bags. How many does each get, and how many are left over?

   Each gets **5** Left over **2**

7. Zara has 25 chocolate bars to share equally among 6 cousins. How many does each get, and how many are left over?

   Each gets **4** Left over **1**

8. Noah has 91 candy corns to share equally among 8 jars. How many does each get, and how many are left over?

   Each gets **11** Left over **3**

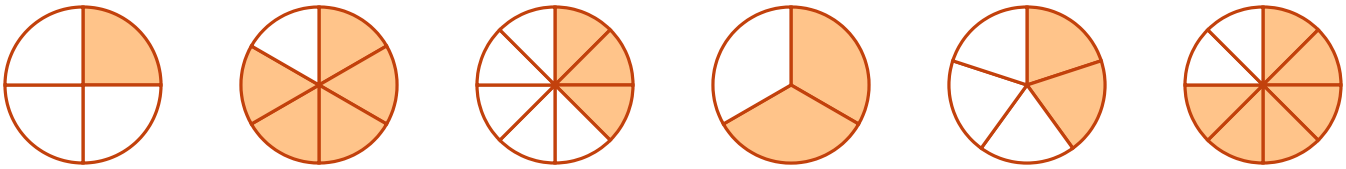
Pumpkin Pie Fractions Answer key

Grades 3-5

Write the fraction of each pie that is shaded. Then find the fraction of each group.

Name _____ Date _____

Part A: What fraction is shaded?



1/4 5/6 3/8 2/3 2/5 6/8

Part B: Fraction of a group

1. Aarav says 1/3 of his 24 candies are lollipops. How many is that?

   Answer: 8

2. Zara says 3/4 of her 28 candies are chocolate. How many is that?

   Answer: 21

3. Omar says 2/5 of the 35 pumpkins on the farm are white. How many is that?

   Answer: 14

4. Nora says 5/6 of her 42 decorations are bats. How many is that?

   Answer: 35

5. Arjun says 3/8 of the 48 cupcakes have orange frosting. How many is that?

   Answer: 18

6. Maya says 2/3 of the 27 costumes in the shop are capes. How many is that?

   Answer: 18

Haunted House Riddle Answer key

Grades 3-5

Solve each problem, find the answer in the code box and write its letter.
Then spell out the answer to the riddle.

Name _____ Date _____

What room does a ghost always stay out of?

1,305 = I **1,572** = L **1,574** = G **2,015** = F **2,839** = V **3,370** = R **3,639** = A
3,669 = O **4,154** = N **4,393** = M **4,811** = H **5,175** = E **5,533** = D **8,281** = T
8,458 = B **9,128** = C

1. 5,081 + 3,200 = **8,281** **T**
2. 5,304 − 493 = **4,811** **H**
3. 5,666 − 491 = **5,175** **E**
4. 4,285 − 2,713 = **1,572** **L**
5. 595 + 710 = **1,305** **I**
6. 6,116 − 3,277 = **2,839** **V**
7. 968 + 337 = **1,305** **I**
8. 2,104 + 2,050 = **4,154** **N**
9. 1,032 + 542 = **1,574** **G**
10. 6,066 − 2,696 = **3,370** **R**
11. 3,362 + 307 = **3,669** **O**
12. 1,176 + 2,493 = **3,669** **O**
13. 927 + 3,466 = **4,393** **M**

T	H	E		L	I	V	I	N	G		R	O	O	M
1	2	3		4	5	6	7	8	9		10	11	12	13

Graveyard Integers Answer key

Grades 6-8

Add, subtract, multiply and divide. Watch the signs.

Name _____ Date _____

Part A: Compute

1. −15 − 4 = **−19**
2. −1 − 8 = **−9**
3. (−9) × (−7) = **63**
4. 7 × (−1) = **−7**
5. −44 ÷ 11 = **−4**
6. 12 + (−11) = **1**
7. −15 + (−10) = **−25**
8. (−5) × (−5) = **25**
9. (−13) × 3 = **−39**
10. (−3) × 9 = **−27**
11. −7 + 1 = **−6**
12. −81 ÷ (−9) = **9**
13. −14 + 5 = **−9**
14. 24 ÷ (−8) = **−3**
15. −2 − 3 = **−5**
16. −8 − 8 = **−16**
17. 24 ÷ (−4) = **−6**
18. −8 − 6 = **−14**
19. 5 ÷ (−5) = **−1**
20. 4 + (−6) = **−2**

Part B: Word problems

21. At 9 PM the graveyard was 4°F. By 3 AM the temperature had dropped 9 degrees. What was the temperature at 3 AM?

    Answer: **−5°F**

22. By sunrise, the temperature from problem 21 rose 4 degrees. What was the temperature at sunrise?

    Answer: **−1°F**

23. A bat roosts 13 feet below the cave entrance, at −13 feet. It flies up 9 feet. Where is it now?

    Answer: **−4 ft**

24. A haunted elevator starts on floor 6, goes down 9 floors, then up 4 floors. Which floor is it on?

    Answer: **1**

Costume Shop Sale Answer key

Grades 6-8

Use percents to work out each price. Show your work in the space.

Name _____ Date _____

1. A witch costume costs $36.00. It is 25% off. What is the sale price?

   Answer: **$27.00**

2. A vampire cape was $48.00 and is now $30.00. What percent is the discount?

   Answer: **37.5%**

3. Face paint costs $22.50 before an 8% sales tax. What is the total?

   Answer: **$24.30**

4. A mask costs $40.00. The shop takes 20% off, then an extra 10% off the new price. What do you pay?

   Answer: **$28.80**

5. Is the deal in problem 4 the same as 30% off? Explain in one sentence.

   Answer: **28% off in total, not 30%**

6. A bag of candy cost $4.00 last year and $5.00 this year. What is the percent increase?

   Answer: **25%**

7. A pumpkin patch sold 360 pumpkins. 15% were white. How many white pumpkins were sold?

   Answer: **54**

8. 27 of the 36 students in a class wore costumes. What percent is that?

   Answer: **75%**

Equation Escape Room

Answer key

Grades 6-8

Solve each equation for x. Find x in the code box and write its letter. The letters answer the riddle.

Name _____ Date _____

What is a vampire's favorite fruit?

−8 = C **−6** = I **−5** = R **1** = E **2** = T **3** = D **4** = F **7** = B **8** = A **9** = N **10** = H **11** = K

1. $-2x + 9 = -7$ x = **8** **A**
2. $-3x + 9 = -18$ x = **9** **N**
3. $6x + 1 = 8x - 1$ x = **1** **E**
4. $2x + 12 = -4$ x = **−8** **C**
5. $4(x + 5) = 28$ x = **2** **T**
6. $-2(x + 11) = -38$ x = **8** **A**
7. $-2(x + 4) = 2$ x = **−5** **R**
8. $x/3 + 9 = 7$ x = **−6** **I**
9. $3x - 12 = 15$ x = **9** **N**
10. $-2x + 11 = 9$ x = **1** **E**

A	N	E	C	T	A	R	I	N	E
1	2	3	4	5	6	7	8	9	10

Mystery Picture Plot Answer key

Grades 6-8

Plot each point on the grid and connect them in order with straight lines.

Name _____ Date _____

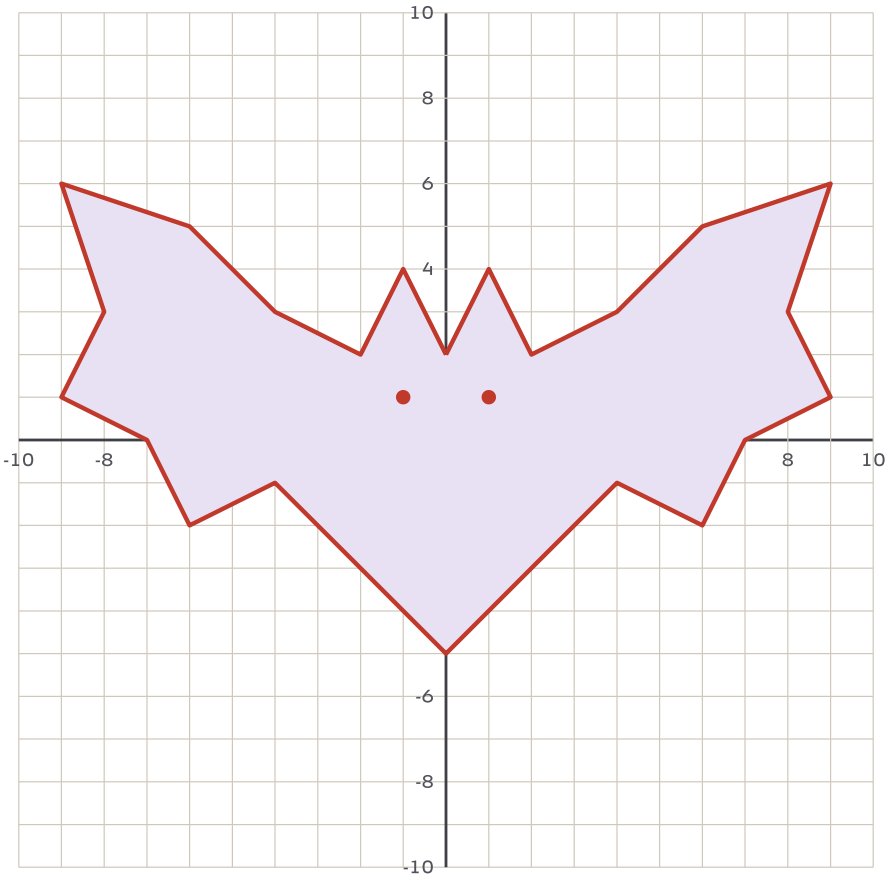
Connect these points in order:

(0, 2)	(1, 4)
(2, 2)	(4, 3)
(6, 5)	(9, 6)
(8, 3)	(9, 1)
(7, 0)	(6, −2)
(4, −1)	(2, −3)
(0, −5)	(−2, −3)
(−4, −1)	(−6, −2)
(−7, 0)	(−9, 1)
(−8, 3)	(−9, 6)
(−6, 5)	(−4, 3)
(−2, 2)	(−1, 4)
(0, 2)	

Then plot two dots for the eyes: (−1, 1) and (1, 1)

What did you draw?

A bat



Quadrant check

Pick one point from the list for each quadrant.

Quadrant I: **(2, 2)**

Quadrant II: **(−2, 2)**

Quadrant III: **(−4, −1)**

Quadrant IV: **(4, −1)**

Any point from the list in the right quadrant is correct. Points on an axis, like (0, 2), are not in any quadrant.

Haunted House Systems Answer key

High School

Write a system of two equations for each problem, then solve it.

Name _____ Date _____

1. A haunted house sold 180 tickets for $1,864. Adult tickets cost $12 and child tickets cost $8. How many of each were sold?

   Answer: **106 adult, 74 child**

2. Three chocolate bars and two lollipops cost $24. One chocolate bar and four lollipops cost $18. Find the price of each (whole dollars).

   Answer: **bar $6, lollipop $3**

3. A witch mixes a 10% potion with a 40% potion to make 6 liters of a 20% potion. How many liters of each did she use?

   Answer: **4 L of 10%, 2 L of 40%**

4. A ghost ship sails 24 miles downstream in 3 hours and 6 miles back upstream in 3 hours. Find the speed of the ship in still water and the speed of the current.

   Answer: **ship 5 mph, current 3 mph**

5. Solve the system: $2x + 3y = -1$ and $x - y = -8$.

   Answer: **$x = -5$, $y = 3$**

6. Solve the system: $5x - 2y = 22$ and $3x + 4y = 8$.

   Answer: **$x = 4$, $y = -1$**

Pumpkin Launch Answer key

High School

A catapult launches pumpkins. Height h is in feet and time t is in seconds. Round to 2 decimal places where needed.

Name _____ Date _____

	Height model	Time to top	Maximum height	Time to land
Launch A	$h(t) = -16t^2 + 64t + 6$	2 s	70 ft	4.09 s
Launch B	$h(t) = -16t^2 + 80t + 4$	2.5 s	104 ft	5.05 s
Launch C	$h(t) = -16t^2 + 96t + 10$	3 s	154 ft	6.10 s

Hint: the top of the arc is at $t = -b/(2a)$. The pumpkin lands when $h(t) = 0$.

Work space

4. Which launch stays in the air longest? How much longer than Launch A?

   Answer: **Launch C, 2.01 s longer**

5. For Launch A, when is the pumpkin exactly 54 feet high? Give both times.

   Answer: **t = 1 s and t = 3 s**

Candy Bag Probability

Answer key

High School

Give each answer as a fraction in lowest terms unless the question asks for a count.

Name _____ Date _____

A trick-or-treat bag holds 6 chocolate bars, 4 lollipops, 5 gummy worms, 3 caramels. That is 18 candies in all. You pull candies without looking.

1. What is the probability of pulling a chocolate bar?

   Answer: **1/3**

2. What is the probability of not pulling a gummy worm?

   Answer: **13/18**

3. You pull one candy, eat it, then pull another. What is the probability both are chocolate bars?

   Answer: **5/51**

4. You pull a candy, put it back, and pull again. What is the probability of a lollipop and then a caramel?

   Answer: **1/27**

5. If you pull a candy and put it back 90 times, about how many lollipops would you expect?

   Answer: **20**

6. A spinner pays 3 candies on 1/4 of spins, 1 candy on 1/2 of spins and 0 candies otherwise. What is the expected number of candies per spin?

   Answer: **5/4**

Zombie Outbreak Answer key

High School

A zombie outbreak starts with 5 zombies, and the number doubles every 3 hours: $N(t) = 5 \cdot 2^{(t/3)}$, where t is in hours.

Name _____ Date _____

Part A: Complete the table

Hours	t = 0	t = 3	t = 6	t = 12	t = 18
Zombies	5	10	20	80	320

Part B: Solve

2. After how many hours are there exactly 1,280 zombies?

   Answer: **24 hours**

3. After how many hours are there 1,000 zombies? Round to one decimal place.

   Answer: **22.9 hours**

4. A second town grows linearly: $L(t) = 5 + 40t$. Which town has more zombies at t = 12? At t = 24?

   Answer: **linear at 12 (485 vs 80), exponential at 24 (1280 vs 965)**

5. A cure potion starts at 80% strength and loses half its strength every 5 days. What is its strength after 15 days?

   Answer: **10%**

6. When does the potion first drop to 5% strength?

   Answer: **20 days**