Lincoln Public Schools Math 8
McDougall Littell Middle School Math Course 3 – Chapter 12

Items marked A, B, C are increasing in difficulty. Group "A" questions are the most basic while Group "C" are the most difficult and require higher levels of thinking skills. The level of difficulty is only relative to the same section. Most problems include random number generation within individual problems. [n] indicates n problems types are available in the topic. Note: Some problems require rounding. Round when finding each value which is an answer to the problem. For example, if has triangle sides a and b, round c after finding its value and before continuing any further calculations. If there is only one answer to the problem, only round the final answer. Use **3.14** for π in all equations.

Section 12.1 – Omit in LPS objectives.
Section 12.2 – Omit in LPS objectives.

Section 12.3
    Objective: Students will be able to interpret circle and line graphs.

    12_3 Angle from a Percent – [2] – Find the central angle of a circle graph given a percentage.
    12_3 Angle from a Ratio – [2] – Find the central angle of a circle graph given a ratio.
    12_3 Angles from a Data Set – [2] – Given a data set, find the central angle of a circle for each category.
    12_3_Interpret Line Graph Points – [2] – Find the y-value for a given x-value on a line graph.
    12_3 Line Graph Max/Min – [4] – Find the value of the maximum or minimum or the "x-value" of the maximum or minimum value of a line graph.
    12_3 Line Graph Slope – [4] – Interpret the slope of a line graph as increasing or decreasing. Find the increasing or decreasing regions of the graph.

Section 12.4
    Objective: Students will be able to use fundamental counting principle.

    12_4 Counting Principle A – [5] – Use the fundamental counting principle to determine the possible number of outcomes for two items.
    12_4 Counting Principle B – [4] – Use the fundamental counting principle to determine the possible number of outcomes for three items.

Section 12.5 – Omit in LPS objectives.
Section 12.6 – Omit in LPS objectives.
Section 12.7 – Omit in LPS objectives.

Section 12.8
    Objective: Students will be able to find the probabilities of independent and dependent events.

    12_4 Probability A – [2] – Find the probability of an event occurring multiple times with a single favorable outcome.
    12_4 Probability B – [2] – Find the probability of an event occurring when multiple favorable outcomes are possible.
    12_8 Independent Probability – [3] – Find the probability of independent events.
    12_8 Dependent Probability – [2] – Find the probability of dependent events.
    12_8 Probability – [4] – Mixed probability problems.

Lincoln Public Schools – Math 8 – McDougal Littell Middle School Math Course 3

Please note: This demo is a one problem sample from each topic. Most problems are random number problems and consist of multiple types for each topic. Some images are not properly formatted in this demo due to the conversion to Word form. They will appear properly formatted when used in EDU.

12_3 Angle from a Percent – [2] – Find the central angle of a circle graph given a percentage.

What angle (to the nearest degree) should be used to represent 89% in a circle graph?
Do not enter the ° symbol in the answer box.

✔ CORRECT

Your Answer: 320

Correct Answer: 320

Comment: What angle (to the nearest degree) should be used to represent 89% in a circle graph?
Do not enter the ° symbol in the answer box.

What angle is 89% of 360°?
x = 0.89 • 360°
x = 320°

12_3 Angle from a Ratio – [2] – Find the central angle of a circle graph given a ratio.

What angle (to the nearest degree) should be used to represent 8 out of 30 in a circle graph?
Do not enter the ° symbol in the answer box.

✔ CORRECT

Your Answer: 96

Correct Answer: 96

Comment: What angle (to the nearest degree) should be used to represent 8 out of 30 in a circle graph?
Do not enter the ° symbol in the answer box.

Use a proportion to find the ratio out of 360°.

$$\frac{8}{30} = \frac{x}{360}$$

360 • 8 = 30 • x
2,880 = 30x
x = 96°

12_3 Angles from a Data Set – [2] – Given a data set, find the central angle of a circle for each category.

Your response	Correct response

A recent survey of Burger Mania customers reported that 27 preferred the Regular Hamburger, 33 preferred the Cheeseburger and 25 preferred the Deluxe Burger. You have been asked to create a circle chart for this data. Find the angle (to the nearest degree) for each category. Do not enter the degree symbol in the answer boxes.

Hamburger **114** (33%)

Cheeseburger **140** (33%)
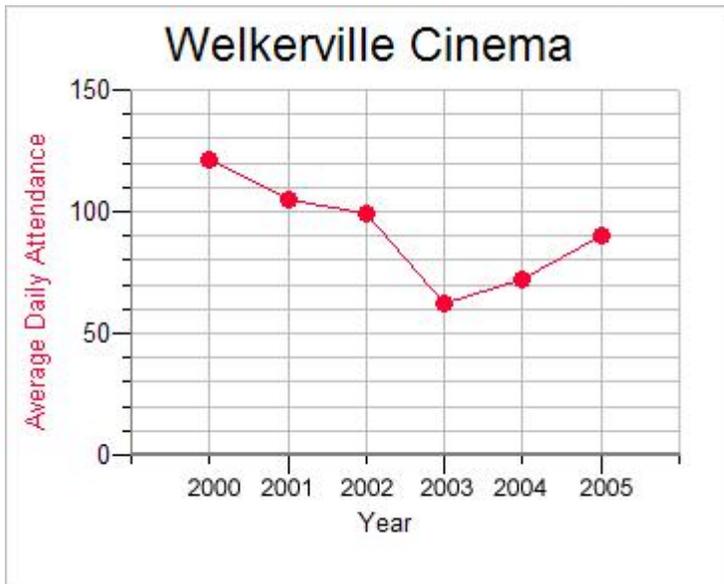
Deluxe Burger **106** (33%)

Comment:

A recent survey of Burger Mania customers reported that 27 preferred the Regular Hamburger, 33 preferred the Cheeseburger and 25 preferred the Deluxe Burger. You have been asked to create a circle chart for this data. Find the angle (to the nearest degree) for each category.
Do not enter the degree symbol in the answer boxes.

The total number of surveyed customers is $27 + 33 + 25 = 85$
Use a proportion to find the ratio out of 360°.

Hamburger		Cheeseburger		Deluxe Burger	
27	x	33	x	25	x
$\dfrac{27}{85}$	$= \dfrac{x}{360}$	$\dfrac{33}{85}$	$= \dfrac{x}{360}$	$\dfrac{25}{85}$	$= \dfrac{x}{360}$

$360 \cdot 27 = 85 \cdot x$ $360 \cdot 33 = 85 \cdot x$ $360 \cdot 25 = 85 \cdot x$
$9{,}720 = 85x$ $11{,}880 = 85x$ $9{,}000 = 85x$
$x = 114°$ $x = 140°$ $x = 106°$

12_3_Interpret Line Graph Points – [2] – Find the y-value for a given x-value on a line graph.

A line graph of the average daily attendance at the Welkerville Cinema for the years 2000-2005 is shown above. Use the graph to estimate the enrollment in the year 2003.

Your Answer: 62

Correct Answer: 62±3

Comment: A line graph of the average daily attendance at the Welkerville Cinema for the years 2000-2005 is shown above. Use the graph to estimate the enrollment in the year 2003.
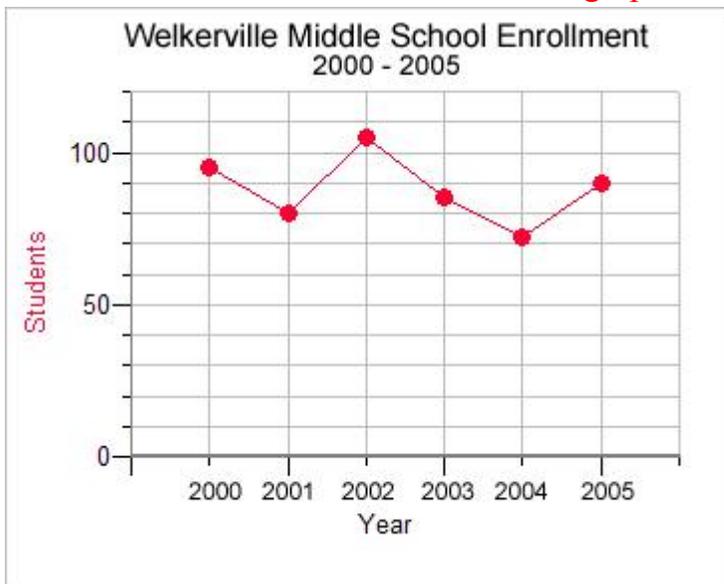
The attendance is 62. Acceptable answers would be between 59 and 65.

12_3 Line Graph Max/Min – [4] – Find the value of the maximum or minimum or the "x-value" of the maximum or minimum value of a line graph.

A line graph of the enrollment at Welkerville Middle School for the years 2000-2005 is shown above. Use the graph to find the year when the enrollment was a maximum.
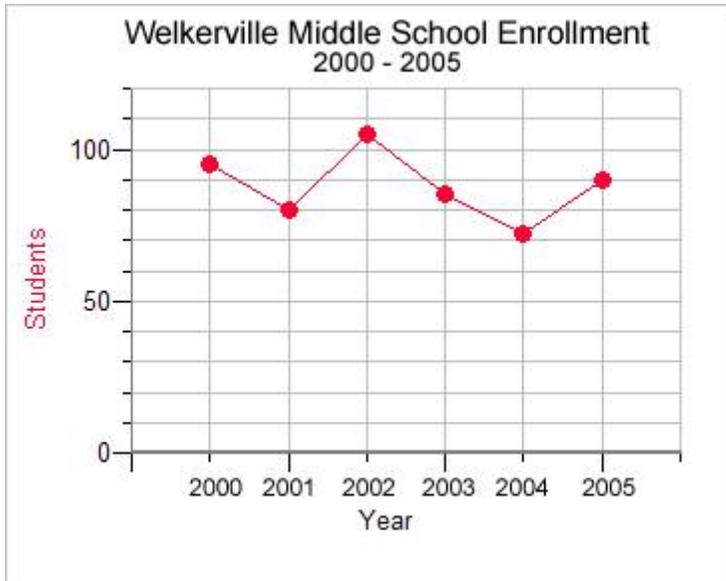
Your 2002

Answer:

Correct Answer: 2,002

Comment:

A line graph of the enrollment at Welkerville Middle School for the years 2000-2005 is shown above. Use the graph to find the year which enrollment was at a maximum.

The maximum enrollment was in the year 2002.

12_3 Line Graph Slope – [4] – Interpret the slope of a line graph as increasing or decreasing. Find the increasing or decreasing regions of the graph.

A line graph of the enrollment at Welkerville Middle School for the years 2000-2005 is shown above. Use the graph to determine when the enrollment increased. Place a check in front of each interval over which the enrollment increased.

Choice	Selected	✓/✗	Points
2000-2001	No		
2001-2002	Yes	✓	+1
2002-2003	No		
2003-2004	No		
2004-2005	Yes	✓	+1

Total correct answers: 2

Partial Grading Explained

Comment:

A line graph of the enrollment at Welkerville Middle School for the years 2000-2005 is shown above. Use the graph to determine when the enrollment increased. Place a check in front of each interval over which the enrollment increased.

The enrollment increased from:
2001 to 2002 and 2004 to 2005
The enrollment decreased from:
2000 to 2001, 2002 to 2003, and 2003 to 2004

12_4 Counting Principle A – [5] – Use the fundamental counting principle to determine the possible number of outcomes for two items.

A bag contains 10 numbered red balls. A second bag contains 11 numbered white balls. How many different ways can a person draw one ball from each bag?

Your Answer: 110

Correct Answer: 110

Comment: A bag contains 10 numbered red balls. A second bag contains 11 numbered white balls. How many different ways can a person draw one ball from each bag?

10 • 11 = 110 possible outcomes.

12_4 Counting Principle B – [4] – Use the fundamental counting principle to determine the possible number of outcomes for three items.

In a closet are 12 shirts, 5 pants and 2 pairs of shoes. How many different ways can a person put together an outfit?

Your Answer: 120

Correct Answer: 120

Comment: In a closet are 12 shirts, 5 pants and 2 pairs of shoes. How many different ways can a person put together an outfit?

There are 12 • 5 • 2 = 120 outfits.

12_4 Probability A – [2] – Find the probability of an event occurring multiple times with a single favorable outcome.

Your response	Correct response
A coin is flipped by 5 persons. What is the probability of all individuals tossing a head?	A coin is flipped by 5 persons. What is the probability of all individuals tossing a head?
Write your answer as a fraction in reduced form.	Write your answer as a fraction in reduced form.
1 (50%)	1
___	___
32 (50%)	32

✓ CORRECT

Comment:
The number of possible outcomes is two for each of the 5 persons.
Outcomes = 2 times itself 5 times = $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^5 = 32$.
The number of favorable outcomes where each person tosses a head is 1.
The probability is 1/32.

12_4 Probability B – [2] – Find the probability of an event occurring when multiple favorable outcomes are possible.

Your response	Correct response
A person rolls 6 number cubes. What is the probability of all number cubes landing on the same value?	A person rolls 6 number cubes. What is the probability of all number cubes landing on the same value?
Write your answer as a fraction in reduced form.	Write your answer as a fraction in reduced form.
1 (50%)	1
___	___
7776 (50%)	7776

✓ CORRECT

Comment:
The number of possible outcomes is 6 for each of the 6 number cubes.
Outcomes = 6 times itself 6 times = $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 = 6^6 = 46{,}656$.
The number of favorable outcomes where each cube lands on the same value. They can all be 1, 2 , 3, 4, 5, or 6. There are 6 possible favorable outcomes.
The probability is 6/46,656. The greatest common factor is 6. The reduced fraction is 1/7,776.

Your response	Correct response
A bag contains 9 red marbles and 12 green marbles. What is the probability of drawing a red marble, replacing the marble and drawing a green marble? Write your answer as a reduced fraction in the answer boxes.	A bag contains 9 red marbles and 12 green marbles. What is the probability of drawing a red marble, replacing the marble and drawing a green marble? Write your answer as a reduced fraction in the answer boxes. ✓ CORRECT

12 (50%)

―――

49 (50%)

12

―――

49

Comment:

A bag contains 9 red marbles and 12 green marbles. What is the probability of drawing a red marble, replacing the marble and drawing a green marble?
Write your answer as a reduced fraction in the answer boxes.

There are 21 marbles with 9 red marbles.

The probability of drawing a red marble is $\dfrac{9}{21}$

The marble is replaced so there are still 21 marbles in the bag. There are 12 green marbles.

The probability of drawing a red marble is $\dfrac{12}{21}$

The probability of drawing a red followed by a green with replacement is $\dfrac{9}{21} \cdot \dfrac{12}{21} = \dfrac{108}{441}$

The greatest common factor is 9. Reduced the fraction is $\dfrac{12}{49}$

12_8 Dependent Probability – [2] – Find the probability of dependent events.

Your response	Correct response
A bag contains 10 red marbles and 6 green marbles. What is the probability of drawing a red marble, placing the marble in your pocket and drawing a green marble? Write your answer as a reduced fraction in the answer boxes.	A bag contains 10 red marbles and 6 green marbles. What is the probability of drawing a red marble, placing the marble in your pocket and drawing a green marble? Write your answer as a reduced fraction in the answer boxes. ✔ CORRECT

Your response:

1 (0%)

———

4 (0%)

Correct response:

1

———

4

Total grade: 0.0×1/2 + 0.0×1/2 = 0% + 0% = 0%

Comment:

A bag contains 10 red marbles and 6 green marbles. What is the probability of drawing a red marble, placing the marble in your pocket and drawing a green marble?
Write your answer as a reduced fraction in the answer boxes.

The total number of marbles is 16.

The probability of a red marble is $\dfrac{10}{16}$

The marble is not replaced so there are 15 marbles in the bag. There are 6 green marbles.

The probability of drawing a green marble is $\dfrac{6}{15}$

The probability of drawing a red followed by a green without replacement is $\dfrac{10}{16} \cdot \dfrac{6}{15} = \dfrac{60}{240}$

The greatest common factor is 60. Reduced the fraction is $\dfrac{1}{4}$

Your response	Correct response
You are a member of a class of 20 students. 2 have already given their book report. What is the probability of you will be called upon next to provide your book report? Write your answer as a reduced fraction in the answer boxes.	You are a member of a class of 20 students. 2 have already given their book report. What is the probability of you will be called upon next to provide your book report? Write your answer as a reduced fraction in the answer boxes.

✓ CORRECT

Your response	Correct response
1 (50%)	**1**
18 (50%)	**18**

Comment:

You are a member of a class of 20 students. 2 have already given their book report. What is the probability of you will be called upon next to provide your book report?
Write your answer as a reduced fraction in the answer boxes.

The total number of students who have not given a book report is 18.

The probability of a being called next is $\dfrac{1}{18}$