

تجميعية أسئلة وتدريبات حسب الهيكل الوزاري منهج ريفيل



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف السابع ← رياضيات ← الفصل الثالث ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 2025-05-27 12:17:59

ملفات اكتب للمعلم اكتب للطالب | اختبارات الكترونية | اختبارات | حلول | عروض بوربوينت | أوراق عمل
منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي | للمدرس

المزيد من مادة
رياضيات:

إعداد: أحمد الجبعي

التواصل الاجتماعي بحسب الصف السابع



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف السابع والمادة رياضيات في الفصل الثالث

تجميعية أسئلة مراجعة حسب الهيكل الوزاري منهج ريفيل

1

حلول مراجعة نهائية حسب الهيكل الوزاري منهج ريفيل

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تجميعية تدريبات حسب الهيكل الوزاري منهج ريفيل

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تجميعية صفحات الكتاب وفق الهيكل الوزاري حسب منهج بريدج

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MATH
G7

أسئلة الهيكل لمادة رياضيات

الصف السابع العام ريفيل

الفصل الدراسي الثالث

2025-2024

مدرسة العدل ح2

أ/ احمد الجبعي

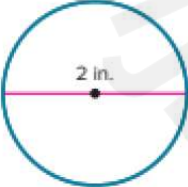
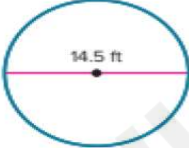


وزارة التربية والتعليم
MINISTRY OF EDUCATION

Start your day with math!



1

1	Find the circumferences of circles given the radius or diameter using the formulas for the circumference	(1-6)	455
<div><div><div>1. Find the circumference of the watch face. Use 3.14 for π. Round to the nearest hundredth if necessary. (Example 1)</div><div></div></div><div><div>2. A circular fence is being used to surround a dog house. How much fencing is needed to build the fence? Use 3.14 for π. Round to the nearest hundredth if necessary. (Example 1)</div><div></div></div></div>			

2

4. Find the circumference of a circle with a radius of 4.4 inches. Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 2)

3. Find the circumference of a circle with a radius of $31\frac{1}{2}$ yards. Use 3.14 for π . Write your answer as a decimal rounded to the nearest hundredth. (Example 2)

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3

3

6. A helicopter pad has a circumference of $47\frac{1}{2}$ yards. Find the approximate diameter of the helicopter pad. Use 3.14 for π . Write your answer as a decimal rounded to the nearest hundredth if necessary. (Example 3)

5. The world's largest flower, the Rafflesia, has a circumference of 286 centimeters. Find the approximate diameter of the flower. Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 3)

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4

4

Find the radius of a circle with a circumference of 6.28 inches. Use 3.14 for π .

أوجد نصف قطر دائرة محيطها 6.28 بوصة. استخدم π تساوي 3.14.

6.28 in

3.4 in

2 in

1 in

$C = \pi \times d$

$6.28 = 3.14 \times d$

$d = 2$

$r = 1$

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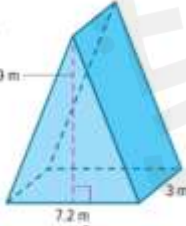
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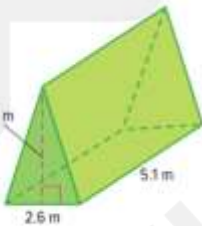
2	Find volumes of prisms and pyramids by using formulas for volume of prisms and pyramids	(3-6)	485
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Find the volume of each figure. Round to the nearest tenth if necessary. (Examples 2 and 3)

3.



4.



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6

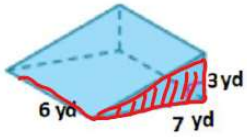
6

Al-Adel School C2

3

Find the volume of the triangular prism shown.

اوجد حجم المنشور الثلاثي الموضح.



$$V = A_b \times h$$
$$= 10.5 \times 7$$
$$V = 73.5 \text{ yd}^3$$

126 yd³

a.

16 yd³

b.

63 yd³

c.

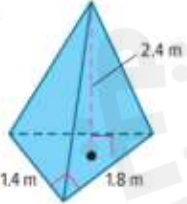
27 yd³

d.

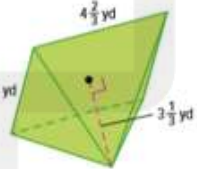
$$A_b = \frac{1}{2} \times b \times h$$
$$= \frac{1}{2} \times 6 \times 3$$
$$= 9$$

7

5.



6.



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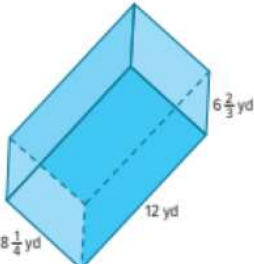
8

8

3	Find the surface areas of solids to the formulas for surface area	(1,2,5,6)	495
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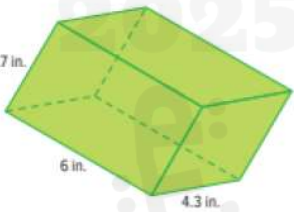
Find the surface area of each prism. Round to the nearest tenth if necessary. (Example 1)

1.



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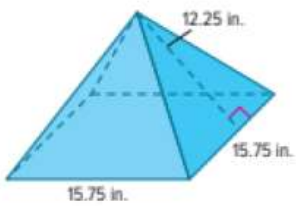
2.



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Find the surface area of each pyramid. Round to the nearest tenth if necessary. (Example 3)

5.



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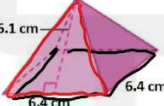
11

Find the formula representing the total surface area of the regular pyramid shown.

أوجد الصيغة التي تمثل المساحة السطحية الإجمالية للهرم المنتظم الموضح.

$A_{\text{base}} = 40.96$

$A_{\text{Total}} \approx 119 \text{ cm}^2$



$$A_r = \frac{1}{2} \times b \times h$$
$$= \frac{1}{2} \times 6.4 \times 6.1 \times 4$$
$$A_{\text{tri}} = 78.08$$

a. $6.4 \times 6.4 + 6.1 \text{ cm}^2$

b. $6.4 \times 6.4 + 4 \times \frac{1}{2} (6.1 \times 6.4) \text{ cm}^2$ ✓

c. $6.4 \times 6.4 + \frac{1}{2} (6.1 \times 6.4) \text{ cm}^2$

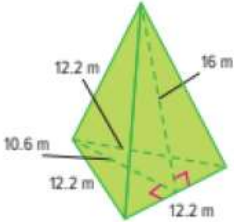
d. $6.4 \times 6.4 + 4 \times (6.1 \times 6.4) \text{ cm}^2$

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12

6.



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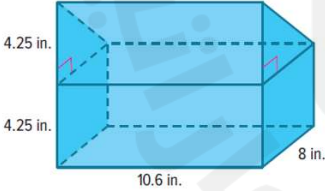
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13

4	Find the volume and surface areas of composite figures	(1-8)	503,504
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1.

Mya's lunchbox is shown. What is the volume of the lunchbox? Round to the nearest tenth if necessary. (Example 1)



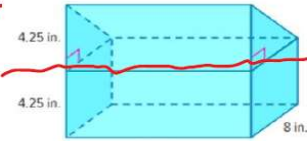
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14

14

Ali's lunchbox is shown. How to find the volume of the lunchbox?

حافظة طعام علي موضحة أبعادها.
كيف تجد حجم حافظة الطعام؟



The volume of a rectangular prism + The volume of a triangular prism

حجم منشور مستطيل + حجم منشور ثلاثي

The volume of a rectangular prism + The volume of a rectangular prism

حجم منشور مستطيل + حجم منشور مستطيل

The volume of a triangular prism + The volume of a triangular prism

حجم منشور ثلاثي + حجم منشور ثلاثي


The volume of a rectangular pyramid + The volume of a triangular pyramid

حجم هرم مستطيل + حجم هرم ثلاثي

Mr.

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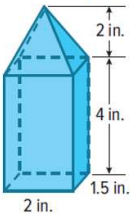
2. Anson's toy rocket is shown. What is the volume of the rocket? Round to the nearest tenth if necessary. (Example 1)



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3. What is the volume of the birdfeeder?
Round to the nearest tenth if necessary. (Example 1)



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4. Zahir made this wooden perch for his pet bird. What is the volume of the bird perch? Round to the nearest tenth if necessary. (Example 1)



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5. Find the surface area of the composite figure. Round to the nearest tenth if necessary.
(Example 2)

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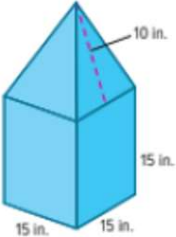
6. Open Response Find the surface area of the composite figure. Round to the nearest tenth if necessary.

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Apply

7. For a charity drive, each classroom is given a coin box made of cardboard like the one shown. The student council wants to construct a version of the coin box that has a scale factor of 3 times the classroom coin box. Is 100 square feet of cardboard enough to build the new coin box? Write an argument that can be used to defend your solution.

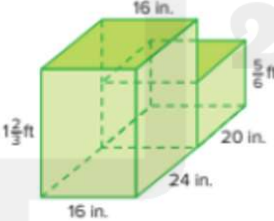


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21

8. Jake wants to buy the foam gymnastic block shown. If the foam used to make the gymnastic block costs \$24.99 per cubic foot, what is the cost of this block, to the nearest dollar?



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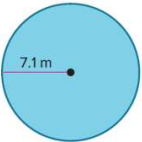
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Find the areas of circles given the radius or diameter using the formula for the area of a circle


(1-6)

465

1. Find the area of the circle. Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 1)



2. Find the area of the circle. Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 1)



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Find the area of the circle shown.
Use 3.14 for π .

أوجد مساحة الدائرة الموضحة.
استخدم π تساوي 3.14

$A = \pi r^2$
 $= 3.14 \times 100^2$
 $= 3.14 \times 10000$
 $= 31400$

314 cm²

3,140 cm²

31,400 cm² ✓

314,000 cm²

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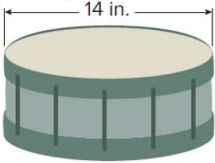
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24


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3. What is the area of the drumhead on the drum? Use 3.14 for π . Round to the nearest hundredth if necessary. (Ex



4. What is the area of one side of the penny? Use 3.14 for π . Round to the nearest hundredth if necessary. (Ex

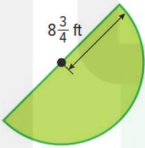


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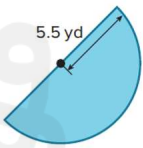
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25

5. Mr. Ling is adding a pond in the shape of a semicircle in his backyard. What is the area of the pond? Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 3)



6. Vidur needs to buy mulch for his garden. What is the area of his garden? Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 3)



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6	Describe the likelihood of an event as impossible, unlikely, equally likely to happen as not to happen, likely, or certain.	(1-8)	513
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The spinner shown is spun once. Classify the likelihood of each event as *impossible, unlikely, equally likely, likely, or certain*. (Example 1)

1. the spinner landing on *dog*

2. the spinner landing on *hamster*

3. the spinner landing on *dog* or *cat*

4. the spinner landing on *bird*

5. the spinner landing on an animal

6. the spinner landing on *cat* or *hamster*

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For Exercises 7 and 8, a card is randomly selected from the ones shown.

7. **Multiselect** Select all events that are unlikely to happen.

☐ selecting the letter B

☐ selecting the letter T

☐ selecting a vowel or S

☐ selecting a consonant or vowel

☐ selecting a consonant or A

☐ selecting the letter Q or R

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8. **Multiselect** Select all of the following events that are equally likely to happen as not to happen.

☐ selecting the letter B

☐ selecting the letter E

☐ selecting a vowel or S

☐ selecting a consonant or vowel

☐ selecting a consonant or A

☐ selecting the letter Q, R, B, or K

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7

Find the relative frequency of an event and use it to predict the chance of that event occurring in the future

(1-5)

527



A spinner with four equal sections of blue, green, yellow, and red is spun 100 times. It lands on blue 14 times, green 10 times, yellow 8 times, and red 68 times. What is the relative frequency of landing on red? green? (Example 1)

2. The frequency table shows the results of a survey about favorite exhibits. (Example 2)

Find the relative frequency that a randomly selected student's favorite exhibit was either butterflies or trains, as a percent.

Exhibit	Frequency
Butterfly	12
Dinosaurs	25
Planets	17
Trains	6

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3. The graph shows the results of an experiment in which a number cube labeled 1 through 6 is rolled a number of times.

Number Cube Experiment

Number Showing	Number of Rolls
1	10
2	8
3	6
4	9
5	5
6	12

Find the relative frequency of rolling a number greater than 3. (Example 3)

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The relative frequency bar graph below shows 100 randomly selected people are asked their blood type. What is the experimental probability that a person chosen at random from the group will have type A or type B?

التمثيل البياني للتردد النسبي بالأعمدة أدناه يوضح نتائج اختيار 100 شخص عشوائياً تم سؤالهم عن فصيلة دمهم. ما الاحتمال التجريبي لاختيار شخص عشوائياً أن يكون من مجموعة فصيلة الدم A أو B؟

Blood Type	Relative Frequency
A	0.4
B	0.1
AB	0.05
O	0.45

65%

50% ✓

45%

40%

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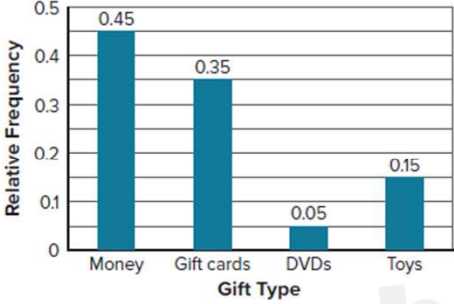
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4. A random selection of students was asked the question “What type of gift did you last receive?” and the results were recorded in the relative frequency bar graph.



Gift Type	Relative Frequency
Money	0.45
Gift cards	0.35
DVDs	0.05
Toys	0.15

What is the experimental probability that a student chosen at random received a gift card or money? (Example 4)

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5. **Open Response** Based on previous orders, the manager of an ice cream shop determines the probability that a customer will order chocolate sauce is 85%. If there are 240 sundaes ordered in one weekend, how many sundaes are expected to be ordered with chocolate sauce?

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8

Find the theoretical probability of a simple event and its complement, and understand the relationship between them

(1-4)

537

1. The spinner shown is spun once. What is the sample space? (Example 1)

2. Each letter in the word MISSISSIPPI is written on a piece of paper and placed into a bag. A letter is drawn at random. What is the sample space? (Example 1)

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The spinner shown is spun once.
What is the sample space?

تم تدوير القرص الدوار الموضح مرة واحدة.
ما هو الفضاء العيني؟

$[1, 2, 3, 4, 5]$

كل النتائج الممكنة -
All the Possible outcomes.

a. 1, 2, 3, 4

b. 1, 2, 3, 4, 5

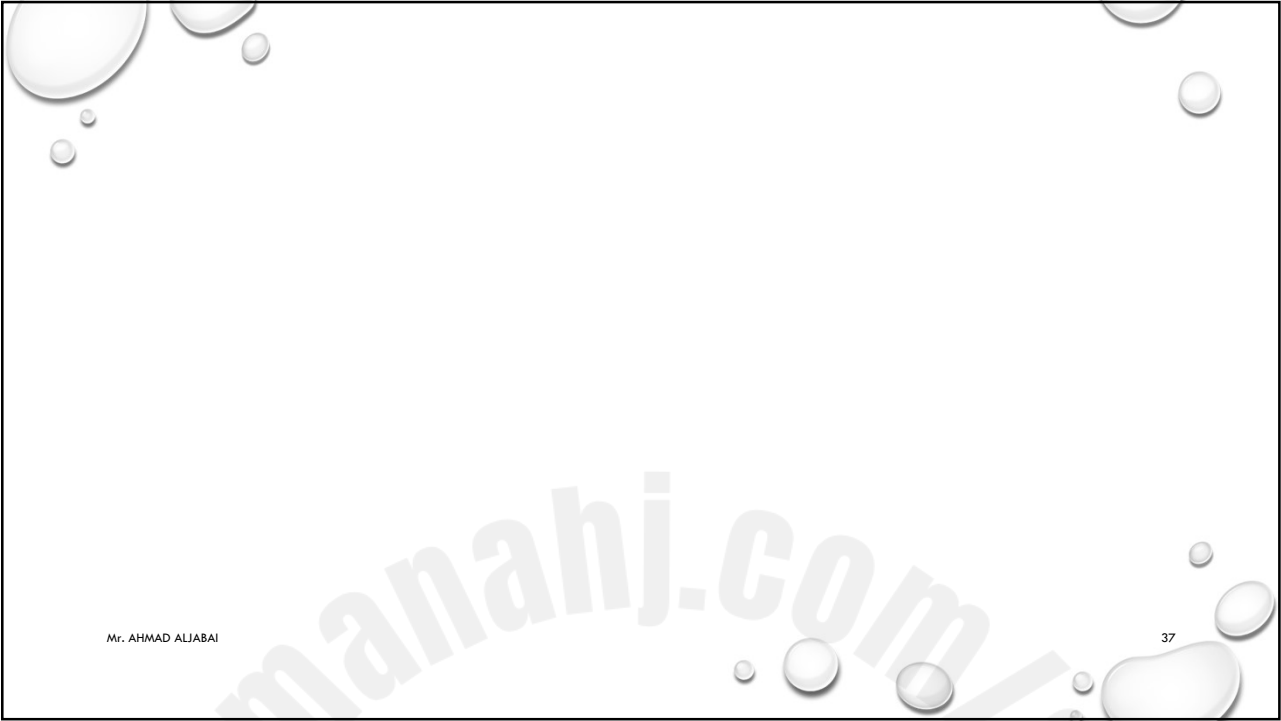
c. 2, 3, 4, 5

d. 1, 2, 3, 4, 5, 6

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3. A teacher placed the letter cards E, L, O, R, U, and W in a bag. A card is drawn at random. Determine the theoretical probability for drawing a card that has a vowel on it. (Example 2)

4. A player in a board game rolls a six-sided number cube labeled 1 through 6 once. Determine the theoretical probability of rolling a 1 or 2. (Example 2)

38

9

Use organized lists, tables, or tree diagrams to find the sample space and probability of a compound event

(EX3,EX4),(3-5)

552,553.56

Example 3 Find Probabilities of Compound Events

Two number cubes, each labeled 1 through 6, are rolled.
What is the probability of rolling a sum of 9?

Step 1 Find the sample space and the favorable outcomes.
Shade or circle the cells that contain two rolls with a sum of 9.

		Roll 2					
		1	2	3	4	5	6
Roll 1	1	(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)
	2	(2, 1)	(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)
	3	(3, 1)	(3, 2)	(3, 3)	(3, 4)	(3, 5)	(3, 6)
	4	(4, 1)	(4, 2)	(4, 3)	(4, 4)	(4, 5)	(4, 6)
	5	(5, 1)	(5, 2)	(5, 3)	(5, 4)	(5, 5)	(5, 6)
	6	(6, 1)	(6, 2)	(6, 3)	(6, 4)	(6, 5)	(6, 6)

There are 36 possible outcomes. The table shows 4 possible outcomes that result in a sum of 9 when the two number cubes are rolled.

Step 2 Find the probability.

$$P(\text{sum of 9}) = \frac{\text{number of outcomes with sum of 9}}{\text{number of total outcomes}}$$
$$= \frac{4}{36}$$
$$= \frac{1}{9} \approx 0.111 \text{ or about } 11.1\%$$

Write the ratio.

Substitute.

Simplify.

So, the probability of rolling a sum of 9 is $\frac{1}{9}$, or about 11.1%.

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2024

Check

A coin is tossed and then a number cube labeled 1 through 6 is rolled. What is the probability of tossing tails and landing on an odd number?

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40

Example 4

Find Probabilities of Compound Events

Two coins are tossed and a number cube labeled 1 through 6 is rolled.

What is the probability of tossing heads at least once and rolling an even number?

Step 1 Find the sample space and the favorable outcomes.

Construct a tree diagram to identify the favorable outcomes.

There are 24 total possible outcomes. The diagram shows 9 possible outcomes that result in tossing heads at least once and rolling an even number.

Step 2 Find the probability.

There are 9 out of 24 possible outcomes that are favorable.

$$P(\text{heads} \geq 1 \text{ and even}) = \frac{9}{24} = \frac{}{}$$

Simplify the ratio.

So, the theoretical probability of tossing at least one heads and rolling an even number is $\frac{3}{8}$, 0.375, or 37.5%.

Coin

Number Cube

Outcomes

H

Tossing Heads Twice

2

4

6

T

Tossing Heads Once

2

4

6

H

Tossing Heads Once

2

4

6

T

2

3

4

5

6

These outcomes are not favorable because heads is not tossed.


41

Check

A spinner with three equal-size sections labeled red, green, and yellow is spun once. Then a coin is tossed and one of two cards labeled with a 1 or a 2 is selected. What is the probability of spinning yellow, tossing heads, and selecting the number 2?

42

3. The spinner shown has six equal-size sections and is spun twice. What is the probability that the product of the numbers spun is 12?
(Example 3)



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4. A number from 0 to 9 is randomly selected and then a letter from A to D is randomly selected. What is the probability that the number 3 and a consonant are selected? (Example 4)

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5. **Open Response** Lorelei tosses a coin 4 times. What is the probability of tossing four heads? Express as a percent. Round to the nearest tenth, if necessary.

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45

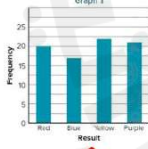
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Spinner(1)

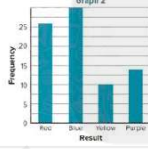


Not Fair

Graph 1



Graph 2



Suppose the spinner shown(1) is spun 80 times. Another spinner (2) with four equal-size sections labeled red, blue, yellow, and purple is spun 80 times. The results are recorded in the following frequency bar graphs. Which graph best represents the results that can be expected from the first spinner? the second spinner?

الفرض أن القرص الموضح (1) يتم تدويره 80 مرة. قرص آخر (2) به أربعة أقسام متساوية ألوانها أحمر، أزرق، أصفر، وأرجواني تم تدويره 80 مرة. النتائج مسجلة في شكلَي التمثيل البياني بالأعمدة للتكرار النسبي. أي شكل بياني هو أفضل تمثيل للنتائج المتوقعة للقرص الأول؟ للقرص الثاني؟

الشكل 1 يمثل نتائج القرص الأول والشكل 2 يمثل نتائج القرص الثاني

Graph 1 represents the results of first spinner and Graph 2 represents the results of second spinner

الشكل 1 يمثل نتائج كلا القرصين

Graph 1 represents Both of tow spinners

الشكل 2 يمثل نتائج القرص الأول والشكل 1 يمثل نتائج القرص الثاني

Graph 2 represents the results of first spinner and Graph 1 represents the results of second spinner

الشكل 2 يمثل نتائج كلا القرصين

Graph 2 represents Both of tow spinners

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10

Design a simulation to represent a simple or compound event

(1-6)

567

1. Suppose the chance of rain on Saturday is $\frac{2}{5}$ and the chance of rain on Sunday is also $\frac{2}{5}$. A student wants to run a simulation to estimate the probability that it will rain on both days. (Example 1)

Part A How can the student model the chance of it raining on each day? Design a simulation.

Part B Suppose the table shows the results of 10 trials of a simulation. An “R” represents a day that it rained and an “N” represents a day that it did not rain.

Trial	1	2	3	4	5	6	7	8	9	10
Saturday	N	R	R	N	N	R	R	N	R	N
Sunday	N	N	R	R	N	R	N	R	R	N

According to the results of the simulation, what is the experimental probability of having rain on both days?

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2. **Open Response** Leigh designs and conducts a computer simulation with 30 trials and uses the data from the simulation to create the relative frequency bar graph shown. The graph shows the relative frequency of the number of spins needed for a spinner divided into 6 equal sections labeled A through F to land on each letter at least once. (Example 2)

Number of Spins	Relative Frequency
7	0.05
8	0.1
9	0
10	0.1
11	0.35
12	0.2
13	0.15
14	0.05

Using the graph, what is the experimental probability that more than 10 spins are needed to land on each letter at least once? Write the probability as a percent.

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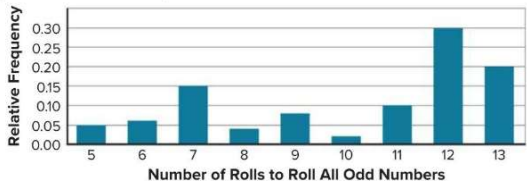
48

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Apply

For Exercises 3 and 4, refer to the following information.

Nelly designs and conducts a computer simulation with 50 trials and uses the data from the simulation to create the frequency bar graph shown. The graph shows the relative frequency of the number of rolls needed for a number cube labeled 7 through 12 to roll all of the possible odd numbers.



3. How much greater is the probability that 7 or 11 rolls are needed than 13 rolls?
4. Is the probability that 7 or 12 rolls are needed greater than the probability that all of the other rolls are needed? Explain.

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5. Use the Internet, or another source, to look up the term *fair game*. Describe a real-world scenario in which a game is fair. Then describe a real-world scenario in which a game is not fair.
6. **MP Model with Mathematics** Describe a real-world situation that can be simulated by tossing a coin and rolling a number cube. Be sure to include the number of outcomes in your description.

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11

Identify biased and unbiased sampling methods and understand that inferences made are only valid if the sampling method is unbiased

(EX1),(1-5)

577,583

Example 1

Identify Valid Sampling Methods

The astronomy association wants to take a survey to decide on the theme for their annual celebration. They are presented with three valid sampling descriptions as options to take the survey.

For each sampling description, select the valid sampling method that best represents it. Circle your selection.

a computer randomly chooses 500 people from a list of members

Stratified	Simple	Systematic
Random	Random	Random
Sample	Sample	Sample

members are separated by state and 10 people are randomly chosen from each state

Stratified	Simple	Systematic
Random	Random	Random
Sample	Sample	Sample

from a list of each member in the association, every 200th is surveyed

Stratified	Simple	Systematic
Random	Random	Random
Sample	Sample	Sample

51

Check

For each sampling description, identify the valid sampling method that best describes it.

To determine which passengers' carry-on bags are to be inspected, every eighth person to check in will have his or her bag inspected.

To test the accuracy of a biometric scanner, a scientist uses a computer to generate a sample of 20 subjects from a population.

The principal of a high school wants to use a survey to decide on the theme for their winter formal dance. She separates the students by grade – 9th, 10th, 11th, and 12th – and then takes a sample of 50 students from each grade.

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1. For each sampling description, identify the valid sampling method that best describes it. Choose from *simple random sample*, *stratified random sample*, or *systematic random sample*. (Example 1)

a. To determine if a candidate for state senator is popular with voters, 25% of voters in 160 counties are surveyed.

b. To determine whether students think a new school library is needed, a computer generates a list of 100 random students and they are surveyed.

c. To determine the freshness of doughnuts, a baker selects a doughnut every 30 minutes and checks it.

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2. Identify the type of biased sample for each situation. Choose from *convenience sample* or *voluntary response sample*. (Example 2)

a. A physical education teacher posts an online survey about whether students would be interested in a 5K race. The responses received determine whether there will be a 5K race.

b. To determine the theme of the school dance, the student council president surveys his homeroom class.

Identify the sample method used and whether it is biased or unbiased. Then determine whether the inference is valid. (Examples 3 and 4)

3. To evaluate customer satisfaction, a grocery store manager gives double coupons to anyone who completes a survey as they enter the store. The store manager determines that customers are very satisfied with their shopping experience in his store.

4. A member of the cafeteria staff asks every fifth student leaving the cafeteria to rank 5 entrees from most favorite to least favorite. She finds that pizza is one of the favorite entrees.

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5. **Multiselect** To evaluate the defect rate of its lenses, a camera lens manufacturer tests every 100th lens off the production line. Out of 1,000 lenses tested, one lens is found to be defective. The manufacturer concludes that 3 lenses out of 3,000 will be defective. Select all of the statements that are true about the sampling method.

☐ This scenario is a systematic random sample.

☐ The sampling method is biased.

☐ The inference is valid.

☐ This scenario is a convenience sample.

☐ The sampling method is unbiased.

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12

Make predictions about a population based on data from a random sample

(1-6)

591

1. A school librarian is purchasing new books for her book clubs in the coming year. In order to determine how many books she needs, she randomly surveys 25 students who plan to participate in one of her book clubs in the coming year. The table shows the results. Predict how many science fiction books she will need to purchase if 125 students participate in book club next year. (Example 1)

Book Club Type	Number of Students
Autobiography	2
Graphic Novel	7
Mystery	10
Science Fiction	6

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2. A smart tablet manufacturer tests 1 out of every 25 screens for flaws. Out of 125 tablets tested, 2 had defective screens. How many defective screens should the manufacturer expect out of 45,000 smart tablets? **(Example 1)**

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3. The superintendent of a school district wants to predict next year's middle school lunch count. The graph shows the results of a survey of randomly selected middle school students. If the district has 5,000 middle school students next year, about how many students plan to buy lunch 1-2 days a week? **(Example 2)**


How Many Days Will You Buy Lunch?

Days	Percentage
0 days	13%
1-2 days	37%
3-4 days	25%
5 days	25%

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a spinner with 4 equal sections
is spun 100 times. It lands on blue
14 times, green 10 times, yellow
13, and red 63 times. What is the
relative frequency of landing on
green?

قرص دوار مقسم إلى 4 أقسام متساوية تم تدويره
100 مرة. يتوقف على الأزرق 14 مرة والأخضر
10 مرات والأصفر 13 مرة والأحمر 63 مرة. ما
النسبة النسبية لتوقفه على الأخضر ؟

Relative Freq. $(G) = \frac{10}{100} = 10\%$

a.

14%

b.

13%

c.

10% ✓

d.

63%

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4. The guidance department conducted a random survey of the student body and found that 16% of the students plan to volunteer at the school festival. Predict how many volunteer positions they should plan for a population of 950 students. (Example 2)

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60

5. The owner of a travel agency randomly surveyed its customers. The survey showed that 55% of the agency’s customers were planning an overseas vacation the following year. Predict how many of the travel agency’s 12,400 travelers will vacation overseas the following year. (Example 2)

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6. **Open Response** Every 30 minutes, a box of crayons is pulled from the assembly line to check the quality. Of 240 checked boxes of crayons, 2 did not pass inspection. How many boxes out of 12,000 should the crayon company expect to not pass inspection?

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62

13

Understand how collecting multiple samples of data can help determine how predictions about a population might vary

(1-2)

601

1.

The dot plot displays data from 14 random samples, each consisting of 30 middle school students. Each dot represents the mean number of sports played per year by students in the sample. (Example 1)

a. Which number best represents the mean number of sports played by middle school students?

b. Find and interpret the variability in the distribution.

Means of Samples

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2. Open Response

Below are two dot plots containing sample means from the same population.

Plot A

Plot B

A. How many samples are represented in each plot? How do you know?

B. Which dot plot has higher variability? Defend your answer.

C. One plot contains samples of size 25, and the other plot contains samples of size 60. Which dot plot contains the samples of size 60? How do you know?

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14

Use the measures of center and measures of variation to compare two samples

(1-5)

611,612

1. The double dot plot shows the weights in pounds of several housecats and small dogs. Compare their centers and variability. What are some appropriate inferences you can make about the data? (Example 1)

Weights (lb)

Housecats

Small Dogs

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2025

2024

Consider the distribution shown below. If the mean is 25. Find the mean absolute deviation MAD of the distribution

اعتبر التوزيع الموضح أدناه . إذا كان المتوسط الحسابي يساوي 25 . أوجد متوسط الانحراف المطلق للتوزيع .

Distribution

25

$\{20, 15, 10, 10, 5, 0, 0, 5, 10, 15, 20, 25, 30, 35, 40, 45\}$

$MAD = \frac{120}{12} = 10$

a. 30

b. 20

c. 10 ✓

d. 25

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66

The dot plot graphed below shows scores of 8 students on a short test.

Find the mean of the students' scores.

درجات 8 طلاب في اختبار قصير تم تمثيلها باستخدام النقاط الممثلة كما هو موضح بالشكل أدناه، أوجد المتوسط الحسابي لدرجات الطلاب.

Short test scores درجات الاختبار القصير

Handwritten calculations:

$$3 + 9 + 12$$
$$[1, 2, 3, 3, 3, 4, 4, 4]$$
$$\text{Mean} = \frac{24}{8} = 3$$

Multiple choice options:

a. 3.5

b. $2\frac{3}{4}$

c. 3 ✓

d. 4

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2. The double box plot shows the number of Calories per serving for various fruits and vegetables. What are some appropriate inferences you can make about the data? (Example 1)

Calories per Serving

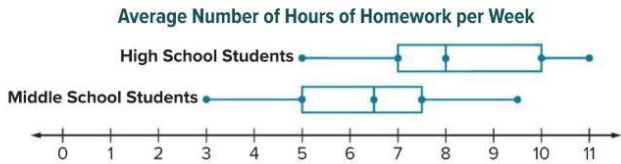
Fruits

Vegetables

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3. **Table Item** The double box plot represents the average number of hours of homework each week for high school students and middle school students. Use the measures of center and variability of these samples to select the age group(s) to which each statement applies.



	Middle School	High School
The median is greater.		
The IQR is 2.5.		
The data have greater variability.		
A person from this sample is more likely to have more than 7 hours of homework a week.		
The data are more symmetric.		

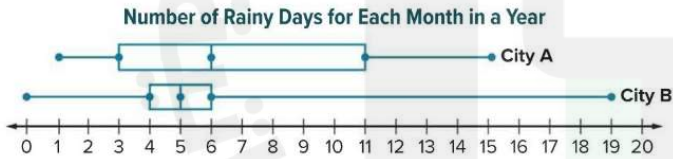
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Apply

4. The double box plot shows the number of rainy days for each month in a year for two different cities. For which city is it more likely that a randomly selected month will have 6 or more rainy days?



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5. The double dot plot shows the number of years of experience playing lacrosse for members of two high school lacrosse teams. A player with six years of experience is on a lacrosse team. On which team is the player more likely to be? Write an argument that can be used to defend your solution.

Number of Years of Experience Playing Lacrosse

Team	3	4	5	6	7	8
Summerville Jaguars	0	2	3	4	2	1
Southwest Broncos	1	3	3	3	1	0

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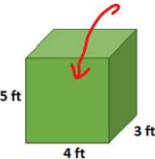
71

15	Find volumes of prisms and pyramids by using formulas for volume of prisms and pyramids	(1-2,7-8,9,10)	485
<div><div><p>1. A cooler is in the shape of a rectangular prism. What is the volume of the cooler? Round to the nearest tenth if necessary. (Example 1)</p><p>22 in. 12 in. $10\frac{1}{2}$ in.</p></div><div><p>2. A cereal box is in the shape of a rectangular prism. What is the volume of the cereal box? Express your answer as a decimal rounded to the nearest tenth if necessary. (Example 1)</p><p>$1\frac{3}{4}$ in. 8 in. $12\frac{1}{8}$ in.</p></div></div>			
<div><div>Mr. AHMAD ALJABAI</div><div>72</div></div>			

72

A box is in the shape of rectangular prism. What the volume of the box?

صندوق على شكل منشور مستطيل.
ما حجم الصندوق؟



$V = L \times W \times H$
 $= 4 \times 3 \times 5$
 $= 60 \text{ ft}^3$

17 ft²

17 ft³

60 ft³ ✓

60 ft²

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7. A triangular prism has a height of 5.9 meters and volume of 86.376 cubic meters. What is the area of the base of the prism? (Example 4)

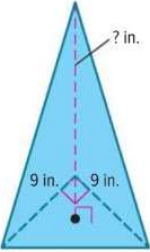
8. A rectangular pyramid has a height of 9.5 centimeters and a volume of 494 cubic centimeters. What is the area of the base of the pyramid? (Example 5)

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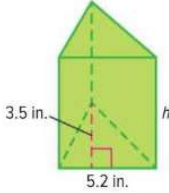
74

74

9. A glass stand to display a doll is in the shape of a right triangular pyramid as shown. The volume of the stand is 202.5 cubic inches. What is the height of the stand? (Example 5)



10. **Open Response** A triangular box of sticky notes is shown. The volume of the box of sticky notes is 54.6 cubic inches. What is the height of the box of sticky notes?




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PART 2: FREE RESPONSE QUESTIONS (FRQ):
QUESTIONS 16-21
(الكتابة) (الأسئلة المقالية)



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76

16	Find the areas of circles given the radius or diameter using the formula for the area of a circle	EX4(7-8)	462,465
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Example 4 Use Circumference to Find Area

The exact circumference of a circle is 32π inches.

What is the approximate area of the circle? Use 3.14 for π . Round to the nearest hundredth if necessary.

Step 1 Use the circumference formula to find the radius of the circle.

$C = 2\pi r$
Circumference of a circle

$\square = 2\pi r$
Replace C with 32π .

$\frac{32\pi}{\square} = \frac{2\pi r}{\square}$
Division Property of Equality; Divide each side by 2π .

$16 = r$
Simplify.

The radius of the circle is 16 inches.

Step 2 Find the area.

$A = \pi r^2$
Area of a circle

$A \approx 3.14 \cdot \square^2$
Replace π with 3.14 and r with 16.

$A \approx \square$
Simplify.

So, the approximate area of the circle is 803.84 square inches.

Check

The exact circumference of a circle is 13π feet. What is the approximate area of the circle? Use 3.14 for π . Round to the nearest hundredth.

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7. The exact circumference of a circle is 18π inches. What is the approximate area of the circle? Use 3.14 for π . Round to the nearest hundredth if necessary. (Example 4)

Test Practice

8. Open Response The exact circumference of a circle is 34π meters. What is the approximate area of the circle? Use 3.14 for π . Round to the nearest hundredth if necessary.

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78

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17	Find areas of composite figures by decomposing the figures into known shapes	(1-8)	473
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Find the area of each figure. If necessary, use 3.14 for π and round to the nearest hundredth. (Example 1)

1.

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79

2.

3.

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80

80

Find the area of the figure.

$A_1 = \frac{1}{2} \times b \times h$
 $= \frac{1}{2} \times 4 \times 3 = 6 \text{ ft}^2$

6 ft
5 ft
4 ft
3 ft

$A_2 = \frac{1}{2} \times b \times h$
 $= \frac{1}{2} \times 5 \times 6 = 15 \text{ ft}^2$

$A = A_1 + A_2$
 $A_{\text{Total}} = 21$

21 ft² ✓

43 ft²

21 ft

42 ft²

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81

81

4.

5 ft
4 ft

5.

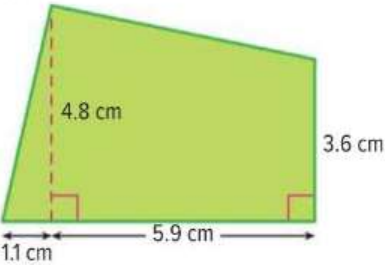
8 m
6 m
10 m
20 m
6 m

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82

82

6.

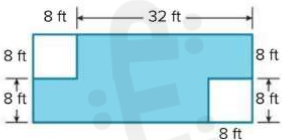


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83

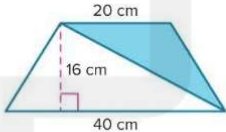
83

7. Find the area of the shaded region.
(Example 2)



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8. Open Response Find the area of the shaded region.



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84

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18	Use organized lists, tables, or tree diagrams to find the sample space and probability of a compound event.	(1-2)	557
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1. An Italian ice shop sells Italian ice in four flavors: lime, cherry, blueberry, and watermelon. The ice can be served plain, mixed with ice cream, or as a drink. Using an organized list or table, what is the sample space of possible outcomes? (Example 1)

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20252024

موقع المناهج

المناهج

86

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2. A deli offers a lunch consisting of a soup, salad, and sandwich from the menu shown in the table. A customer randomly chooses lunch consisting of a soup, salad, and sandwich. Construct and use a tree diagram to determine the sample space of the event. How many possible outcomes are in the sample space? (Example 2)

Soup	Salad	Sandwich
Tortellini	Caesar	Roast Beef
Lentil	Macaroni	Ham
		Turkey

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87

87

19Find the surface areas of solids to the formulas for surface areaEx2(3-4)489,490,495

Example 2 Surface Area of Triangular Prisms


How much paper is needed to cover the gift box shown?

Step 1 Find the area of the bases and faces.

In any triangular prism, the bases are congruent, but the faces are not always congruent.

In this triangular prism, there are two congruent triangular bases. There are three rectangular faces, two of which are congruent.

Area of the Bases




$$\begin{aligned} \text{Area} &= 2\left(\frac{1}{2} \cdot 4 \cdot 3\right) \\ &= 2(6) \\ &= 12 \end{aligned}$$

There are 2 triangular bases, each with an area of $\frac{1}{2} \cdot 4 \cdot 3$.


Multiply.

Simplify.




The combined area of the two triangular bases is 12 square inches.

Area of Face 1



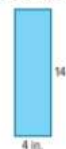
$$\begin{aligned} A &= \square \cdot \square \\ &= \square \end{aligned}$$

Area of Face 2



$$\begin{aligned} A &= \square \cdot \square \\ &= \square \end{aligned}$$

Area of Face 3



$$\begin{aligned} A &= \square \cdot \square \\ &= \square \end{aligned}$$

The areas of the rectangular faces are 50.4 square inches, 50.4 square inches, and 56 square inches.

Step 2 Find the sum of the areas of the faces.

So, $12 + 50.4 + 50.4 + 56$, or _____ square inches of paper is needed to cover the gift box.

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Check

Find the surface area of the prism.

15 ft
12 ft
 $16\frac{1}{4}$ ft
 $6\frac{1}{4}$ ft

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89

89

3. How much cardboard is needed to make the single slice of pizza box shown? (Example 2)

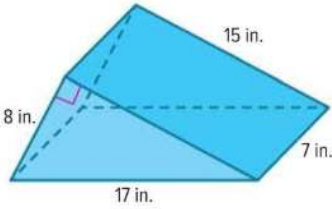
11 in.
6.7 in.
11.5 in.
1 in.

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90

4. **Open Response** What is the surface area of the triangular prism-shaped toy car ramp shown?



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20

Find the theoretical probability of a simple event and its complement, and understand the relationship between them

{5-7}

537

5. The table shows the lengths of time for rides at a fair. Zane will choose a ride at random and wants to find the probability of choosing a ride that lasts less than 200 seconds. What is the probability of the complement of the event? Describe the complement. (Example 3)

Ride	Time (seconds)
Barrel	150
Bumper Cars	195
Circus Carousel	210
Log Ride	120
Roller Coaster	55
Swings	225
Train	300
Zero Gravity Spinner	65

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92

92

6. Red is spun on a spinner with five equal-size sections labeled red, yellow, blue, green, and purple. What is the probability of the complement of the event? Describe the complement. (Example 3)

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Red is spun on a spinner with five equal-size sections labeled red, yellow, blue, green, and purple. What is the probability of the complement of the event?

Not Red

0.20

a.

0.35

b.

0.40

c.

0.80

d.

تم التوقف على اللون الأحمر عند تدوير قرص مقسم إلى خمسة أقسام متساوية ملونة بالأحمر والأصفر، والأزرق والأخضر والأرجواني. ما هو احتمال متعك الحدث؟

$P(\text{Not Red}) = \frac{2 \times \left(\frac{4}{5}\right)}{2 \times \left(\frac{5}{10}\right)} = \frac{8}{10} = 0.8$

$P(R) = \frac{1}{5}$

94

94

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47

Test Practice

7. **Multiselect** A sportscaster predicted that the local high school baseball team has a 75% chance of winning tonight. Select all of the values that represent the probability of the team *not* winning.

☐ 0.75 ☐ 25%

☐ 0.25 ☐ $\frac{3}{4}$

☐ 75% ☐ $\frac{1}{4}$

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95

95

21	Make predictions about a population based on data from a random sample.	EX1, EX2(1-5)	587,591
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Example 1

Make Predictions

A high school athletic director is purchasing equipment for the athletic department in the coming year. In order to determine how much equipment is needed, the director randomly surveys 150 students who plan to participate in athletics in the coming year. The table shows the results.

Sport	Students
Baseball/Softball	36
Basketball	30
Football	45
Gymnastics	12
Tennis	18
Volleyball	9

How many volleyball uniforms should the director purchase if 500 total students plan to participate in athletics?

Step 1 Write the ratio of students who plan to play volleyball to the total number of students surveyed.

volleyball players

→

9

total students surveyed

→

150

Step 2 Set up and solve a proportion. Let v represent the number of volleyball uniforms the director should order.

volleyball players

→

9

students surveyed

→

150

volleyball uniforms

→

v

total number of students

→

500

$$\frac{9}{150} = \frac{v}{500}$$

$$\frac{3}{50} = \frac{v}{500}$$

$$\frac{3}{50} = \frac{30}{500}$$

Write $\frac{9}{150}$ as the equivalent ratio $\frac{3}{50}$.

Because $50(10) = 500$, multiply 3 by 10 to obtain 30.

So, the director should purchase 30 volleyball uniforms.

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A local dentist wants to know how many adults in a town receive regular cleanings. The dentist surveys 120 random adults living in the town and finds 84 people receive regular cleanings. If there are 8,500 adults in the town, how many can be expected to receive regular cleanings?

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Example 2 Make Predictions

The superintendent of a school district wants to determine the number of volunteer positions to have available for students. The graph shows the results of a survey where randomly selected teenagers within the district were asked, "How often do you volunteer?"

How Often Teens Volunteer

Frequency	Percentage
Not at all	34%
Once a week	29%
Once a month	12%
Once a year	3%
A few times a year	22%

If the district has 2,000 teenage students, about how many positions should the superintendent have available for students who volunteer once a week?

While you do not know the number of teens in the sample, the circle graph shows the percent of teens who volunteer. This percent is the ratio that can be used for the sample. The graph shows that 29% of students volunteer once a week.

Find 29% of 2,000. Let n represent the unknown part.

$$\frac{29}{100} = \frac{n}{2,000}$$

Write the proportion.

$$\frac{29}{100} = \frac{n}{2,000}$$

Find an equivalent ratio.

So, the superintendent should have about 29(20), or 580 volunteer positions available for students who volunteer once a week.

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The manager of a movie theater wants to better predict how much popcorn to prepare each day. Every 15th customer was surveyed as to whether or not they buy popcorn and 63% said they buy popcorn. If the theater expects to have 3,200 customers during a weekend, how many people are expected to buy popcorn?

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1. A school librarian is purchasing new books for her book clubs in the coming year. In order to determine how many books she needs, she randomly surveys 25 students who plan to participate in one of her book clubs in the coming year. The table shows the results. Predict how many science fiction books she will need to purchase if 125 students participate in book club next year. (Example 1)

Book Club Type	Number of Students
Autobiography	2
Graphic Novel	7
Mystery	10
Science Fiction	6

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A survey found that 8 out of every 10 students have a mobile.

Suppose there are about 450 students at the school. About how many have a mobile.

وضّح استطلاع أن 8 من بين كل 10 طلاب لديهم هاتف متحرك. افترض أن هناك حوالي 450 طالبا في المدرسة. تنبأ كم منهم لديه هاتف متحرك ؟

$\frac{8}{10} \times 450 = 360$ students

a. 260

b. 150

c. 200

d. 360

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2. A smart tablet manufacturer tests 1 out of every 25 screens for flaws. Out of 125 tablets tested, 2 had defective screens. How many defective screens should the manufacturer expect out of 45,000 smart tablets? (Example 1)

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3. The superintendent of a school district wants to predict next year’s middle school lunch count. The graph shows the results of a survey of randomly selected middle school students. If the district has 5,000 middle school students next year, about how many students plan to buy lunch 1-2 days a week? **(Example 2)**

How Many Days Will You Buy Lunch?

Days per Week	Percentage
0 days	13%
1-2 days	37%
3-4 days	25%
5 days	25%

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4. The guidance department conducted a random survey of the student body and found that 16% of the students plan to volunteer at the school festival. Predict how many volunteer positions they should plan for a population of 950 students. **(Example 2)**

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5. The owner of a travel agency randomly surveyed its customers. The survey showed that 55% of the agency’s customers were planning an overseas vacation the following year. Predict how many of the travel agency’s 12,400 travelers will vacation overseas the following year. **(Example 2)**

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2025 2024

Best Wishes

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