

Department of Education And knowledge	دائرة التعليم والمعرفة
AlMutanabi School Cycle 2	مدرسة المتنبي للتعليم الأساسي



دائرة التعليم والمعرفة
DEPARTMENT OF EDUCATION
AND KNOWLEDGE

عام
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YEAR OF
ZAYED

UNITED ARAB EMIRATES
MINISTRY OF EDUCATION



الإمارات العربية المتحدة
وزارة التربية والتعليم

Final Revision

Mathematics

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Grade 7

2017 - 2018

Name :	
Class :	

Created by

MR /Basyouny Ismail

Circumference

Key Concept

Radius and Diameter

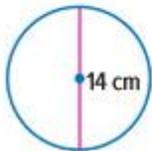
Words The diameter d of a circle is twice its radius r . The radius r of a circle is half of its diameter d .

Symbols $d = 2r$ $r = \frac{d}{2}$

Work Zone

Examples

1. The diameter of a circle is 14 centimeters. Find the radius.



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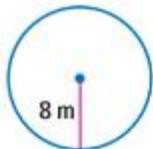
$$r = \frac{d}{2} \quad \text{Radius of circle}$$

$$r = \frac{14}{2} \quad \text{Replace } d \text{ with } 14.$$

$$r = 7 \quad \text{Divide.}$$

The radius is 7 centimeters.

2. The radius of a circle is 8 meters. Find the diameter.



$$d = 2r \quad \text{Diameter of circle}$$

$$d = 2 \cdot 8 \quad \text{Replace } r \text{ with } 8.$$

$$d = 16 \quad \text{Multiply.}$$

The diameter is 16 meters.

Find the radius or diameter of each circle with the given dimension.

a. $d = 23$ cm

b. $r = 3$ cm.

c. $d = 16$ m

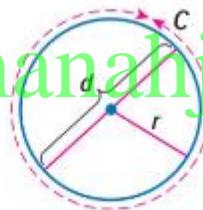
d. $r = 5.2$

Circumference

Key Concept

Words The circumference of a circle is equal to π times its diameter or π times twice its radius.

Model



Symbols $C = \pi d$ or $C = 2\pi r$

Example

3. Find the circumference of a circle with a radius of 21 centimeters.

Since 21 is a multiple of 7, use $\frac{22}{7}$ for π .

$$C = 2\pi r \quad \text{Circumference of a circle}$$

$$C \approx 2 \cdot \frac{22}{7} \cdot 21 \quad \text{Replace } \pi \text{ with } \frac{22}{7} \text{ and } r \text{ with } 21.$$

$$C \approx 2 \cdot \frac{22}{\cancel{7}^1} \cdot \frac{21^3}{1} \quad \text{Divide by the GCF, 7.}$$

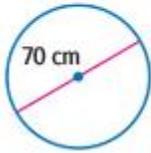
$$C \approx 132 \quad \text{Simplify.}$$

The circumference of the circle is about 132 centimeters.

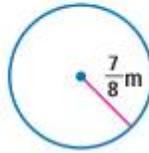
Got it? Do these problems to find out.

Find the circumference of each circle. Use $\frac{22}{7}$ for π .

e.

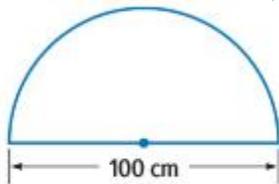


f.

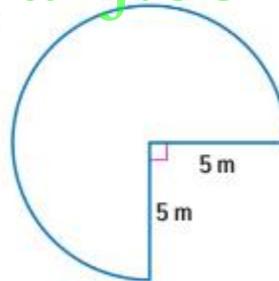


Find the distance around each figure. Use 3.14 for π .

13.



14.



Lesson 2

Area of Circles

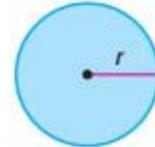
Key Concept

Find the Area of a Circle

Work Zone

Words The area A of a circle equals the product of π and the square of its radius r .

Model



Symbols $A = \pi r^2$

Examples

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

Estimate $3 \times 2 \times 2 = 12$

$$A = \pi r^2$$

Area of a circle

$$A \approx 3.14 \cdot 2^2$$

Replace r with 2.

$$A \approx 3.14 \cdot 4$$

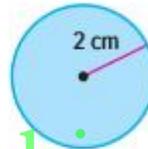
$2^2 = 2 \cdot 2$ or 4

$$A \approx 12.56$$

Multiply.

Check for Reasonableness $12.56 \approx 12$ ✓

The area of the circle is approximately 12.56 square centimeters.



2. Find the area of a circle with a radius of 14 centimeters. Use $\frac{22}{7}$ for π .

Estimate $3 \times 14 \times 14 = 588$

$$A = \pi r^2$$

Area of a circle

$$A \approx \frac{22}{7} \cdot 14^2$$

Replace π with $\frac{22}{7}$ and r with 14.

$$A \approx \frac{22}{7} \cdot 196$$

$14^2 = 14 \cdot 14$ or 196

$$A \approx \frac{22}{\cancel{7}^1} \cdot \overset{28}{\cancel{196}^7}$$

Divide by the GCF, 7.

$$A \approx 616$$

Multiply.

Check for Reasonableness $616 \approx 588$ ✓

The area of the circle is approximately 616 square centimeters.

Got it? Do this problem to find out.

- a. Find the area of a circle with a radius of 3.2 centimeters.
Round to the nearest tenth.

Area of Semicircles

A **semicircle** is half of a circle. The formula for the area of a semicircle is $A = \frac{1}{2}\pi r^2$.

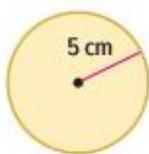
Got it? Do this problem to find out.

- c. Find the approximate area of a semicircle with a radius of 6 centimeters.

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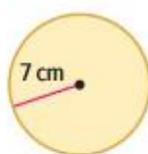
Find the area of each circle. Round to the nearest tenth. Use 3.14 or $\frac{22}{7}$ for π . (Examples 1–3)

1.



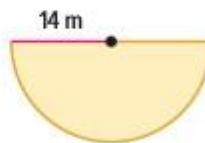
Show your work →

2.



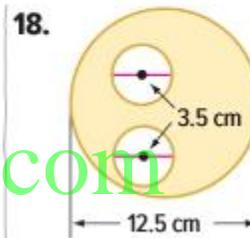
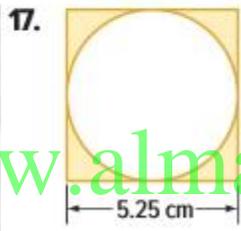
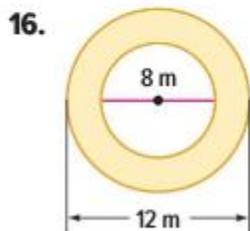
3. diameter = 16 m

4. Ayoub draws the semicircle shown at the right. What is the area of the semicircle?



Use 3.14 for π . (Examples 4 and 5)

MP Persevere with Problems Find the area of the shaded region in each figure. Round to the nearest tenth.



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Area of Composite Figures

Find the Area of a Composite Figure

A **composite figure** is made up of two or more shapes.

To find the area of a composite figure, decompose the figure into shapes with areas you know. Then find the sum of these areas.

Shape	Words	Formula
Parallelogram	The area A of a parallelogram is the product of any base b and its height h .	$A = bh$
Triangle	The area A of a triangle is half the product of any base b and its height h .	$A = \frac{1}{2}bh$
Trapezoid	The area A of a trapezoid is half the product of the height h and the sum of the bases, b_1 and b_2 .	$A = \frac{1}{2}h(b_1 + b_2)$
Circle	The area A of a circle is equal to π times the square of the radius r .	$A = \pi r^2$

Example

1. Find the area of the composite figure.

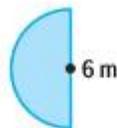
The figure can be separated into a semicircle and a triangle.

Area of semicircle

$$A = \frac{1}{2}\pi r^2$$

$$A \approx \frac{1}{2} \cdot 3.14 \cdot 3^2$$

$$A \approx 14.1$$

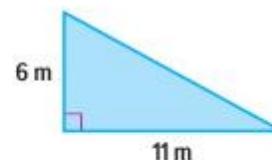
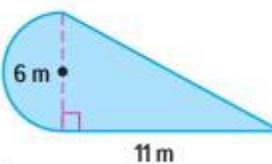


Area of triangle

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2} \cdot 11 \cdot 6$$

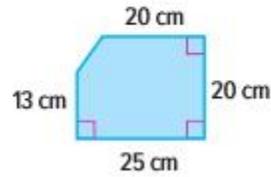
$$A = 33$$



The area of the figure is about $14.1 + 33$ or 47.1 square meters.

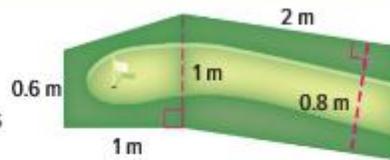
Got it? Do this problem to find out.

- a. Find the area of the figure. Round to the nearest tenth if necessary.



Example

2. A miniature golf hole is composed of a trapezoid and a parallelogram. How many square meters of turf does the hole cover?

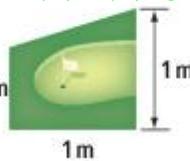


Area of trapezoid

$$A = \frac{1}{2}h(b_1 + b_2)$$

$$A = \frac{1}{2}(1)(0.6 + 1) \cdot 0.6$$

$$A = 0.8$$

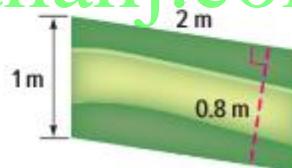


Area of parallelogram

$$A = bh$$

$$A = 2 \cdot 0.8$$

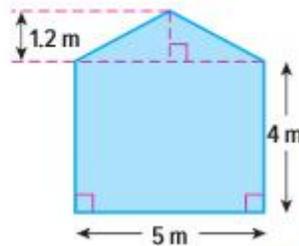
$$A = 1.6$$



So, $0.8 + 1.6$ or 2.4 square meters of turf will be needed.

Got it? Do this problem to find out.

- b. Saeed's father is building a shed. How many square meters of wood are needed to build the back of the shed shown at the right?



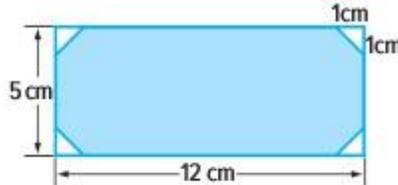
Find the Area of a Shaded Region

Use the areas you know to find the area of a shaded region.

Examples

- 3. Find the area of the shaded region.**

Find the area of the rectangle and subtract the area of the four congruent triangles.



Area of rectangle

$$A = \ell w$$

$$A = 12 \cdot 5 \quad \ell = 12, w = 5$$

$$A = 60 \quad \text{Simplify.}$$

Area of triangles

$$A = 4 \cdot \left(\frac{1}{2} bh \right)$$

$$A = 4 \cdot \frac{1}{2} \cdot 1 \cdot 1 \quad b = 1, h = 1$$

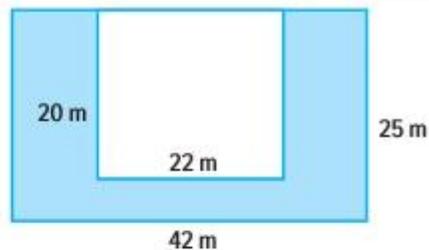
$$A = 2 \quad \text{Simplify.}$$

The area of the shaded region is $60 - 2$ or 58 square centimeters.

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- 4. The blueprint for a hotel swimming area is represented by the figure shown. The shaded area represents the pool. Find the area of the pool.**

Find the area of the entire rectangle and subtract the section that is not shaded.



Area of the entire rectangle

$$A = \ell w$$

$$A = 42 \cdot 25 \text{ or } 1,050$$

Area not shaded

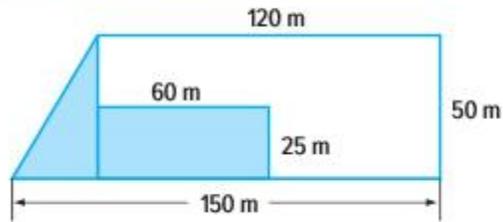
$$A = \ell w$$

$$A = 22 \cdot 20 \text{ or } 440$$

The area of the shaded region is $1,050 - 440$ or 610 square meters.

Got it? Do this problem to find out.

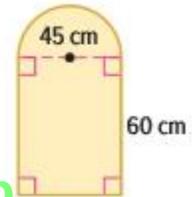
- c. A diagram for a park is shown. The shaded area represents the picnic sections. Find the area of the picnic sections.



1. Yousif installed the window shown. How many square centimeter is the window? Round to the nearest tenth. Use 3.14 for π .

Show your work

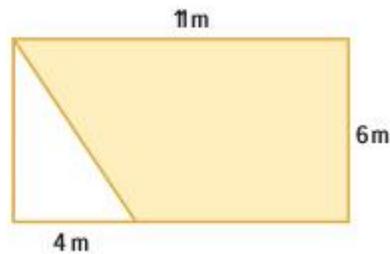
(Examples 1 and 2)



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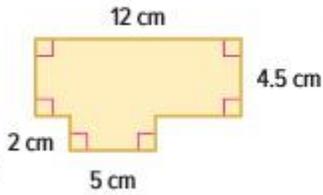
2. A triangle is cut from a rectangle. Find the area of the shaded region.

(Examples 3 and 4)



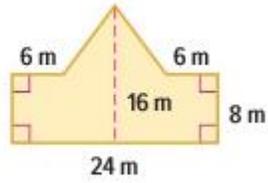
Find the area of each figure. Round to the nearest tenth if necessary. (Example 1)

1.



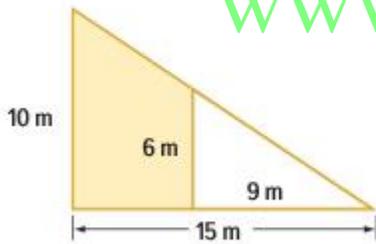
Show your work →

2.

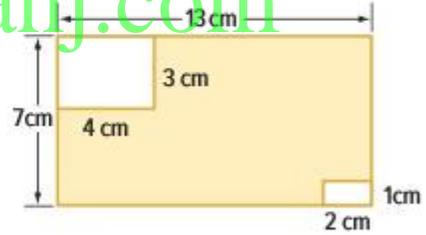


Find the area of the shaded region. Round to the nearest tenth if necessary. (Examples 3 and 4)

8.



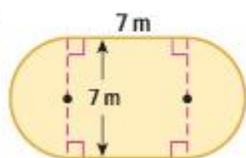
9.



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Find the area of each figure. Round to the nearest tenth if necessary.

15.



87.5 m^2

Homework Help

Area of circle

$A = \pi r^2$

$A = 3.14 \cdot 3.5^2$ or 38.5

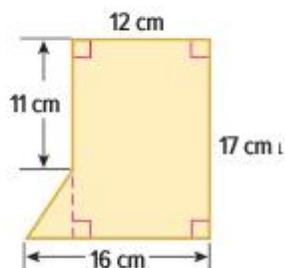
$38.5 + 49 = 87.5$

Area of square

$A = lw$

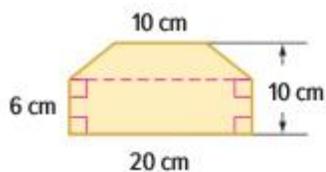
$A = 7 \cdot 7$ or 49

16.

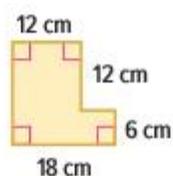


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17.



18.



Lesson 4

Volume of Prisms

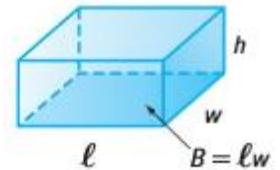
Key Concept

Volume of a Rectangular Prism

Work Zone

Words The volume V of a rectangular prism is the product of the length ℓ , the width w , and the height h . It is also the area of the base B times the height h .

Model



Symbols $V = \ell wh$ or $V = Bh$

Example

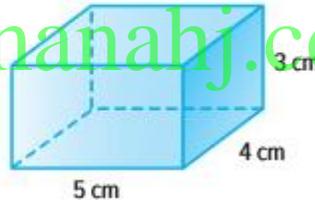
1. Find the volume of the rectangular prism.

$$V = \ell wh \quad \text{Volume of a prism}$$

$$V = 5 \cdot 4 \cdot 3 \quad \ell = 5, w = 4, \text{ and } h = 3$$

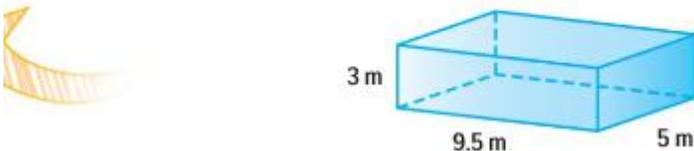
$$V = 60 \quad \text{Multiply.}$$

The volume is 60 cubic centimeters or 60 cm^3 .



Got it? Do this problem to find out.

- a. Find the volume of the rectangular prism shown below.

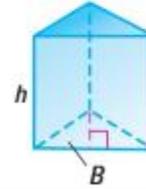


Volume of a Triangular Prism

Words The volume V of a triangular prism is the area of the base B times the height h .

Symbols $V = Bh$, where B is the area of the base.

Model



Example

2. Find the volume of the triangular prism shown.

The area of the triangle is $\frac{1}{2} \cdot 6 \cdot 8$, so replace B with $\frac{1}{2} \cdot 6 \cdot 8$.

$V = Bh$ Volume of a prism

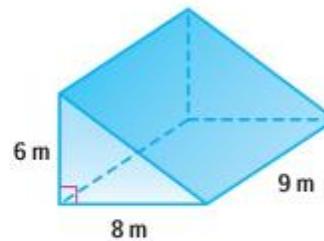
$V = \left(\frac{1}{2} \cdot 6 \cdot 8\right)h$ Replace B with $\frac{1}{2} \cdot 6 \cdot 8$.

$V = \left(\frac{1}{2} \cdot 6 \cdot 8\right)9$ The height of the prism is 9.

$V = 216$

Multiply

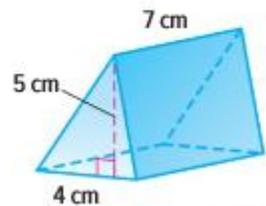
The volume is 216 cubic meters or 216 m^3 .



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Got it? Do this problem to find out.

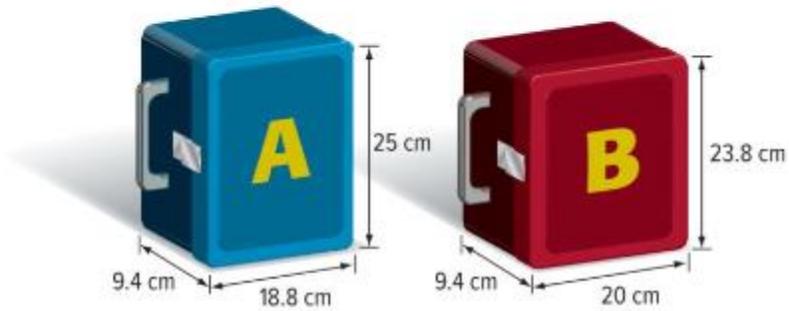
b. Find the volume of the triangular prism.





Example

3. Which lunch box holds more food?



Find the volume of each lunch box. Then compare.

Lunch Box A

$$V = \ell wh$$

$$V = 18.8 \cdot 9.4 \cdot 25$$

$$V = 4,418 \text{ cm}^3$$

Lunch Box B

$$V = \ell wh$$

$$V = 20 \cdot 9.4 \cdot 23.8$$

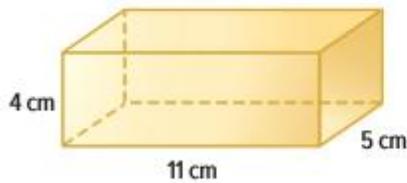
$$V = 4,474.4 \text{ cm}^3$$

Since $4,474.4 \text{ cm}^3 > 4,418 \text{ cm}^3$, Lunch Box B holds more food.

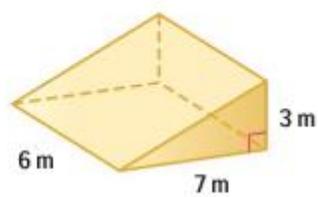
Find the volume of each prism. Round to the nearest tenth if necessary.

(Examples 1–2)

1.

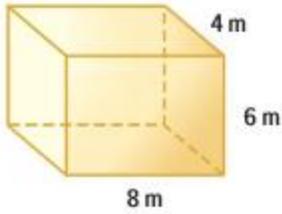


2.

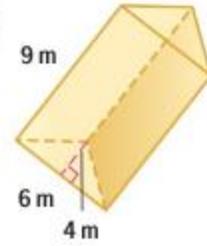
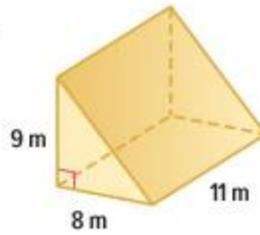


Find the volume of each prism. Round to the nearest tenth if necessary.

(Examples 1–2)



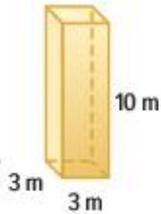
2.



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Find the volume of each prism. Round to the nearest tenth if necessary.

10.

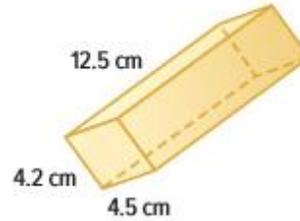


Homework Help

90 m^3

$$\begin{aligned} V &= lwh \\ V &= 3 \cdot 3 \cdot 10 \\ V &= 90 \end{aligned}$$

11.



Lesson 5

Volume of Pyramids

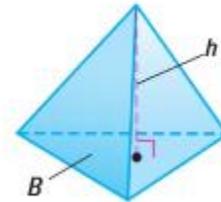
Key Concept

Volume of a Pyramid

Work Zone

Words The volume V of a pyramid is one third the area of the base B times the height of the pyramid h .

Model



Symbols $V = \frac{1}{3}Bh$

Examples

- 1.** Find the volume of the pyramid. Round to the nearest tenth.

$$V = \frac{1}{3}Bh$$

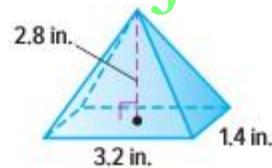
Volume of a pyramid

$$V = \frac{1}{3}(3.2 \cdot 1.4)2.8$$

$B = 3.2 \cdot 1.4, h = 2.8$

$$V \approx 4.2$$

Simplify.



The volume is about 4.2 cubic centimeters.

- 2.** Find the volume of the pyramid. Round to the nearest tenth.

$$V = \frac{1}{3}Bh$$

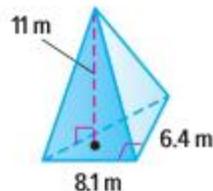
Volume of a pyramid

$$V = \frac{1}{3}\left(\frac{1}{2} \cdot 8.1 \cdot 6.4\right)11$$

$B = \frac{1}{2} \cdot 8.1 \cdot 6.4, h = 11$

$$V = 95.04$$

Simplify.



The volume is about 95.0 cubic meters.

Find the Height of a Pyramid

You can also use the formula for the volume of a pyramid to find a missing height.

Examples

- 3.** The rectangular pyramid shown has a volume of 90 cubic centimeters. Find the height of the pyramid.

$$V = \frac{1}{3}Bh$$

Volume of a pyramid

$$90 = \frac{1}{3}(9 \cdot 5)h$$

$$V = 90, B = 9 \cdot 5$$

$$90 = 15h$$

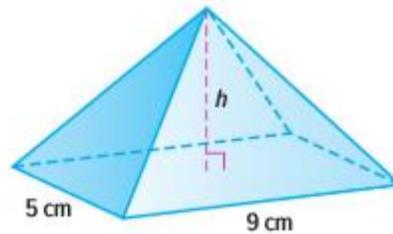
Multiply.

$$\frac{90}{15} = \frac{15h}{15}$$

Divide by 15.

$$6 = h$$

Simplify.



The height of the pyramid is 6 centimeters.

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- 4.** A triangular pyramid has a volume of 44 cubic meters. It has an 8-meter base and a 3-meter height. Find the height of the pyramid.

$$V = \frac{1}{3}Bh$$

Volume of a pyramid

$$44 = \frac{1}{3}\left(\frac{1}{2} \cdot 8 \cdot 3\right)h$$

$$V = 44, B = \frac{1}{2} \cdot 8 \cdot 3$$

$$44 = 4h$$

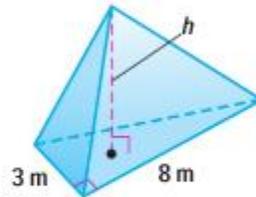
Multiply.

$$\frac{44}{4} = \frac{4h}{4}$$

Divide by 4.

$$11 = h$$

Simplify.



The height of the pyramid is 11 meters.



Example

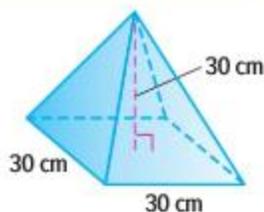
5. Kamilah is making a model of the Food Guide Pyramid for a class project. Find the volume of the square pyramid.

$$V = \frac{1}{3}Bh \quad \text{Volume of a pyramid}$$

$$V = \frac{1}{3}(30 \cdot 30)30 \quad B = 30 \cdot 30, h = 30$$

$$V = 9,000 \quad \text{Multiply.}$$

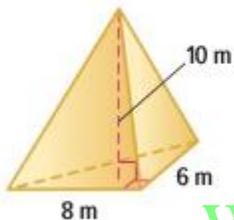
The volume is 9,000 cubic centimeters.



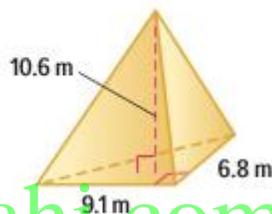
Find the volume of each pyramid. Round to the nearest tenth if necessary. (Examples 1 and 2)



Show your work.



2.



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Lesson 6

Surface Area of Prisms

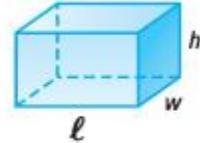
Key Concept

Surface Area of a Rectangular Prism

Work Zone

Words The surface area *S.A.* of a rectangular prism with base ℓ , width w , and height h is the sum of the areas of its faces.

Model



Symbols $S.A. = 2\ell h + 2\ell w + 2hw$

Example

1. Find the surface area of the rectangular prism shown at the right.

Replace ℓ with 9, w with 7, and h with 13.

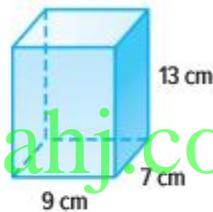
$$\text{surface area} = 2\ell h + 2\ell w + 2hw$$

$$= 2 \cdot 9 \cdot 13 + 2 \cdot 9 \cdot 7 + 2 \cdot 13 \cdot 7$$

$$= 234 + 126 + 182 \quad \text{Multiply first. Then add.}$$

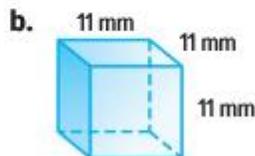
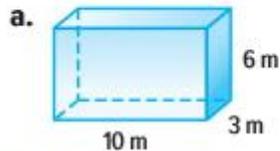
$$= 542$$

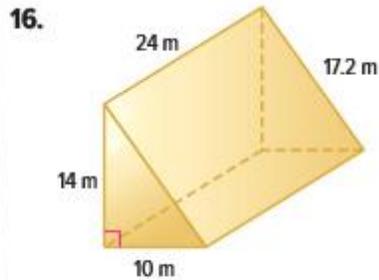
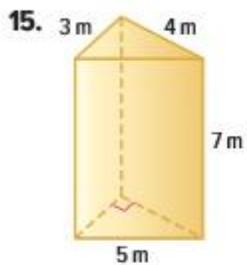
The surface area of the prism is 542 square centimeters.



Got it? Do these problems to find out.

Find the surface area of each rectangular prism.





Geometry

Lesson 7

Surface Area of Pyramids

Key Concept

Surface Area of a Pyramid

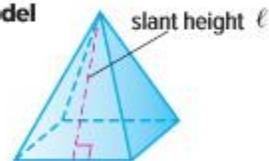
Work Zone

Words

Lateral Area

The lateral surface area $L.A.$ of a regular pyramid is half the perimeter P of the base times the slant height ℓ .

Model



Symbols

$$L.A. = \frac{1}{2}P\ell$$

Words

Total Surface Area

The total surface area $S.A.$ of a regular pyramid is the lateral area $L.A.$ plus the area of the base B .

Symbols

$$S.A. = B + L.A. \text{ or } S.A. = B + \frac{1}{2}P\ell$$

Examples

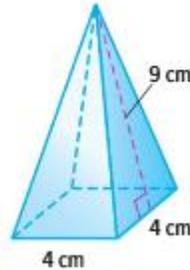
- 1. Find the total surface area of the pyramid.
Round to the nearest tenth.**

$$\text{S.A.} = B + \frac{1}{2}P\ell \quad \text{Surface area of a pyramid}$$

$$\text{S.A.} = 16 + \frac{1}{2}(16 \cdot 9) \quad B = 4 \cdot 4, P = 4 \cdot 4 \text{ or } 16, \ell = 9$$

$$\text{S.A.} = 88 \quad \text{Simplify.}$$

The surface area is 88 square centimeters.



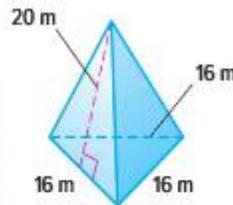
- 2. Find the total surface area of the pyramid
with a base area of 111 square meters.**

$$\text{S.A.} = B + \frac{1}{2}P\ell \quad \text{Surface area of a pyramid}$$

$$\text{S.A.} = 111 + \frac{1}{2}(48 \cdot 20) \quad B = 111, P = 16 + 16 + 16 \text{ or } 48, \ell = 20$$

$$\text{S.A.} = 591 \quad \text{Simplify.}$$

The surface area of the pyramid is 591 square meters.



- 3. Find the total surface area of the pyramid.**

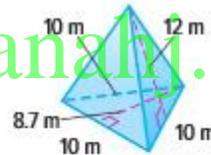
$$\text{S.A.} = B + \frac{1}{2}P\ell \quad \text{Surface area of a pyramid}$$

$$\text{S.A.} = 43.5 + \frac{1}{2}P\ell \quad B = \frac{1}{2} \cdot 10 \cdot 8.7 \text{ or } 43.5$$

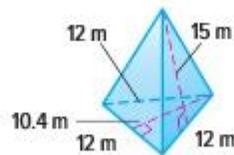
$$\text{S.A.} = 43.5 + \frac{1}{2}(30 \cdot 12) \quad P = 10 + 10 + 10 \text{ or } 30, \ell = 12$$

$$\text{S.A.} = 223.5 \quad \text{Simplify.}$$

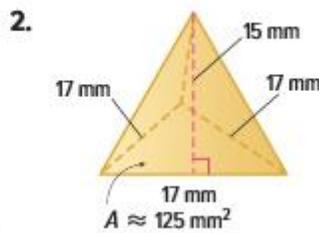
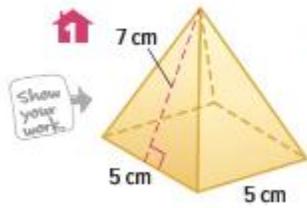
The surface area is 223.5 square meters.



- b. Find the total surface area of the pyramid shown.**



Find the total surface area of each pyramid. Round to the nearest tenth. (Examples 1–3)



Volume and Surface Area of Composite Figures

Work Zone

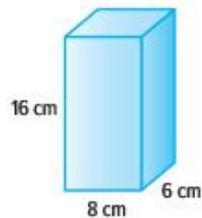
Volume of a Composite Figure

The volume of a composite figure can be found by decomposing the figure into solids whose volumes you know how to find.

Examples

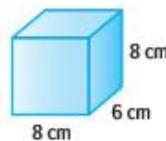
1. Find the volume of the composite figure.

Find the volume of each prism.



$$V = \ell wh$$

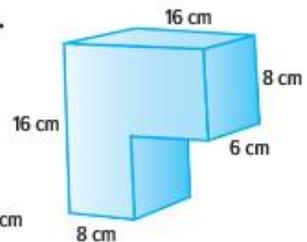
$$V = 8 \cdot 6 \cdot 16 \text{ or } 768$$



$$V = \ell wh$$

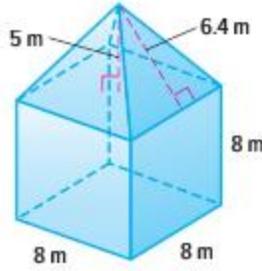
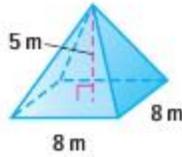
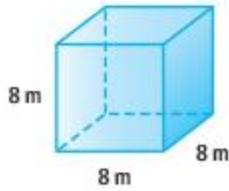
$$V = 8 \cdot 6 \cdot 8 \text{ or } 384$$

The volume is $768 + 384$ or 1,152 cubic centimeters.



2. Find the volume of the composite figure.

Find the volume of the cube and the pyramid. Round to the nearest tenth.



$$V = \ell wh$$

$$V = 8 \cdot 8 \cdot 8 \text{ or } 512$$

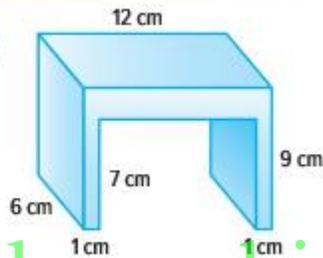
$$V = \frac{1}{3} Bh$$

$$V = \frac{1}{3} (8 \cdot 8) 5 \text{ or } 106.7$$

The volume is $512 + 106.7$ or 618.7 cubic meters.

Got it? Do this problem to find out.

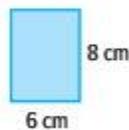
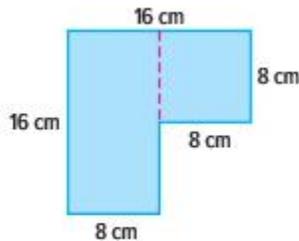
a. Find the volume of the composite figure.



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3. Find the surface area of the figure in Example 1.

The surface is made up of three different polygons.



$$A = \ell w + \ell w$$

$$A = (8 \cdot 16) + (8 \cdot 8)$$

$$A = 128 + 64 \text{ or } 192$$

$$A = \ell w$$

$$A = 6 \cdot 16$$

$$A = 96$$

$$A = \ell w$$

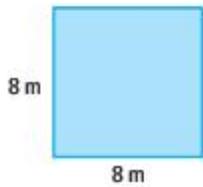
$$A = 6 \cdot 8$$

$$A = 48$$

The total surface area is $2(192) + 2(96) + 4(48)$ or 768 square centimeters.

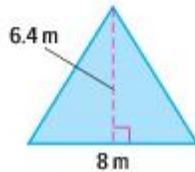
4. Find the surface area of the composite figure in Example 2.

The figure is made up of two different polygons.



$$A = \ell w$$

$$A = 8 \cdot 8 \text{ or } 64$$



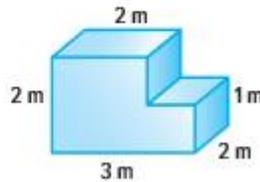
$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2} \cdot 8 \cdot 6.4 \text{ or } 25.6$$

The total surface area is $5(64) + 4(25.6)$ or 422.4 square meters.

Got it? Do this problem to find out.

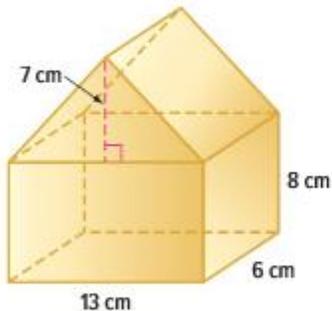
- b. Find the surface area of the steps that are represented by the composite figure shown.



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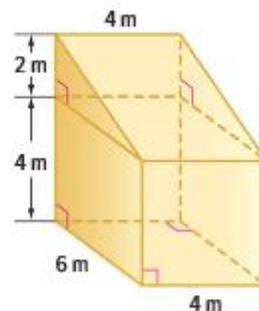
Find the volume of each composite figure. Round to the nearest tenth if necessary. (Examples 1 and 2)

1.



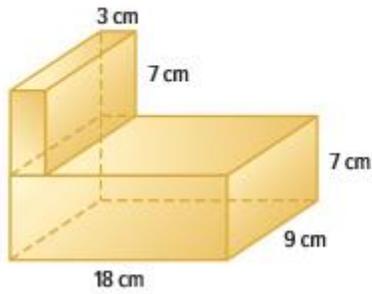
Show your work.

2.

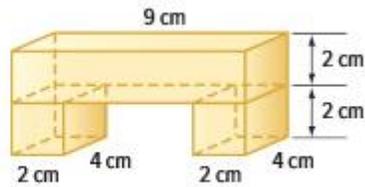


Find the surface area of each composite figure. Round to the nearest tenth if necessary. (Examples 3 and 4)

3.

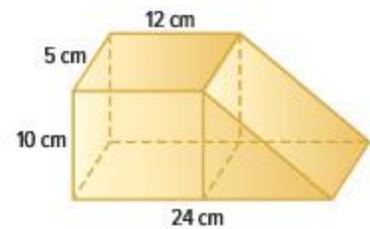


4.



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5 Find the volume of the figure at the right in cubic meters. Round to the nearest tenth. (Examples 1 and 2)

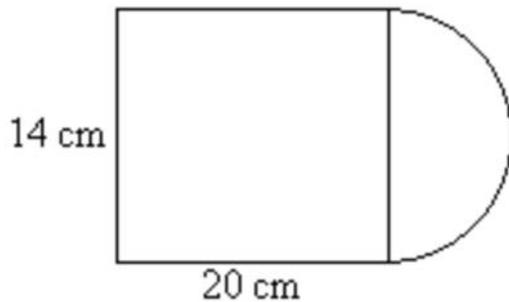


T3 Exam Prep: Grade 7 - Chapters 6-10 (5 chapters)

Chapter 6		Equations and Inequalities; circle the correct answer
Q.1	Solve the equation for x =	A $x + 3 = 6$ B $x + 7 = 9$ C $x + 2 = 5$ D $x + 4 = 8$
Q.2	Solve the equation for $-8 = 2y$	A $y = 10$ B $y = -4$ C -16 D $y = 4$
Q.3	Solve the equation for $0.4a = 3.2$	A $a = 3.6$ B $a = 2.8$ C $a = 8$ D $a = -8$
Q.4	Solve $2x + 4 \geq 16$	A 4 B 6 C 8 D 22
Chapter 7		Geometric Figures; circle the correct answer
Q.5	Identify angle :	 <p align="center">www.almanahj.com</p> <p>A B C D</p> <p>o b t u s e</p>
Q.6	Classify a triangle with 3 congruent sides and 3 acute angles	A scalene B isosceles C acute D equilateral
Q.7	Two angles are complementary when the sum of their measures equals	A 360° B 90° C 180° D 0°
Q.8	Two angles are supplementary when the sum of their measures equals	A 360° B 90° C 180° D 0°
Chapter 8		Measure Figures; circle the correct answer
Q. 9	What is the diameter of a circle with a radius of 18cm?	A 9 cm B 27 cm C -18 cm D 36 cm
Q.10	State the area of a circle with a diameter of 20 cm	

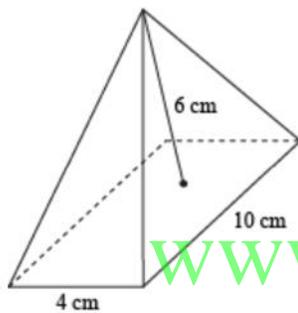
- A 314 cm^2 B 31.4 cm^2 C 3.14 cm^2 D 10 cm

Q.11 State the **area** of the composite figure



- A 280 cm^2 B 77 cm^2 C 357 cm^2 D 434 cm^2

Q.12 Find the **volume** of the rectangular pyramid



- A 20 cm^3 B 240 cm^3 C 120 cm^3 D 80 cm^3

Chapter 9

Probability; circle the correct answer

Q.13 What is the probability of rolling a 5 on a number cube?

- A $\frac{1}{5}$ B $\frac{1}{6}$ C $\frac{2}{5}$ D $\frac{1}{12}$

Q.14 Two number cubes are rolled together 20 times.
What is the **theoretical probability** of rolling a sum of 8?



	1	2	3	4	5	6
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)

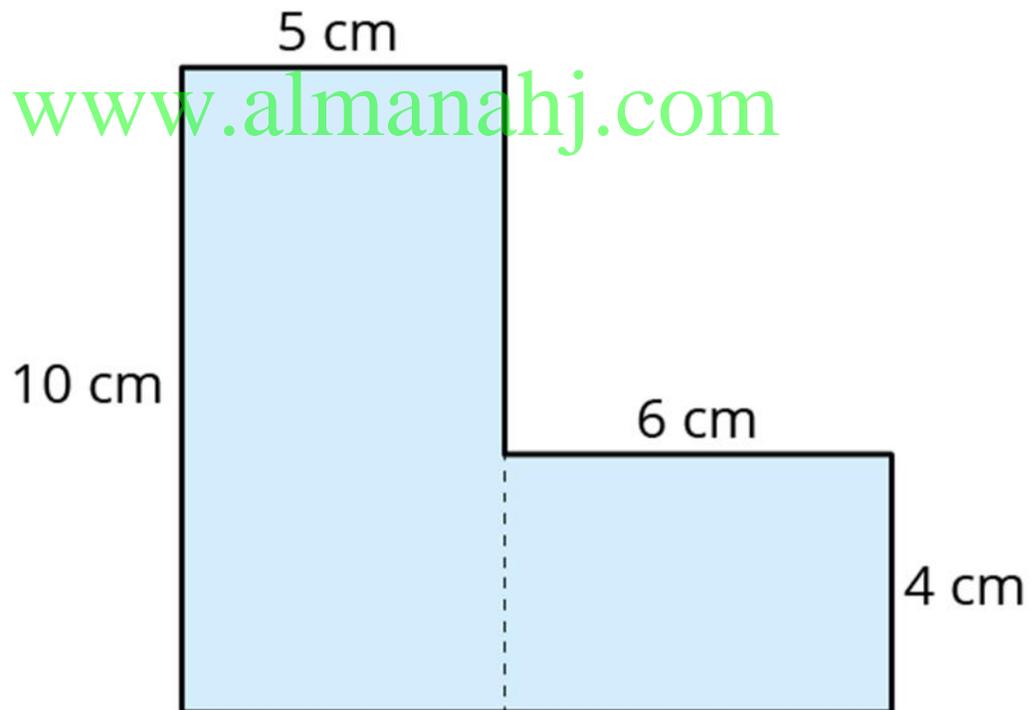
- A $\frac{1}{6}$ B $\frac{6}{36}$ C $\frac{5}{36}$ D $\frac{8}{36}$

Q.15 What is the **sample space** (set of possible outcomes) for tossing a 1 Dirham coin?

- A 2 B 3 C 4 D 1

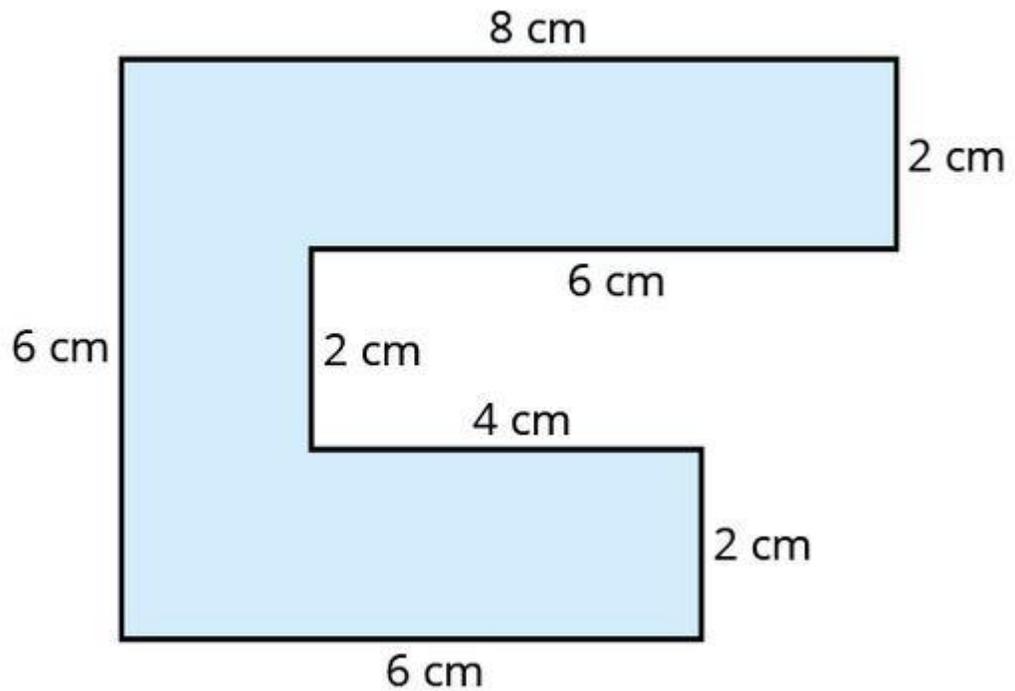
Q.16 What is the total number of outcomes when a dice is rolled and a coin is tossed?

	A	2	B	6	C	8	D	12
Chapter 10	Statistics; circle the correct answer							
Q.17	A survey found that 75% of students use iPhones after school. Predict how many of the 500 students at Mussafah Cycle 2 School use iPhones							
	A	75	B	375	C	250	D	125
Q.18	Find the median of the data set: 15, 23, 19, 20, 23							
	A	19	B	23	C	15	D	20
Q.19	Find the mean of the data set: 15, 23, 19, 20, 23							
	A	20	B	23	C	19	D	15
Q.20	Select the graph best used to show change over a period of time							
	A	Bar graph	B	Histogram	C	Line Graph	D	Circle Graph



What is the area of Bedreya's new shape?

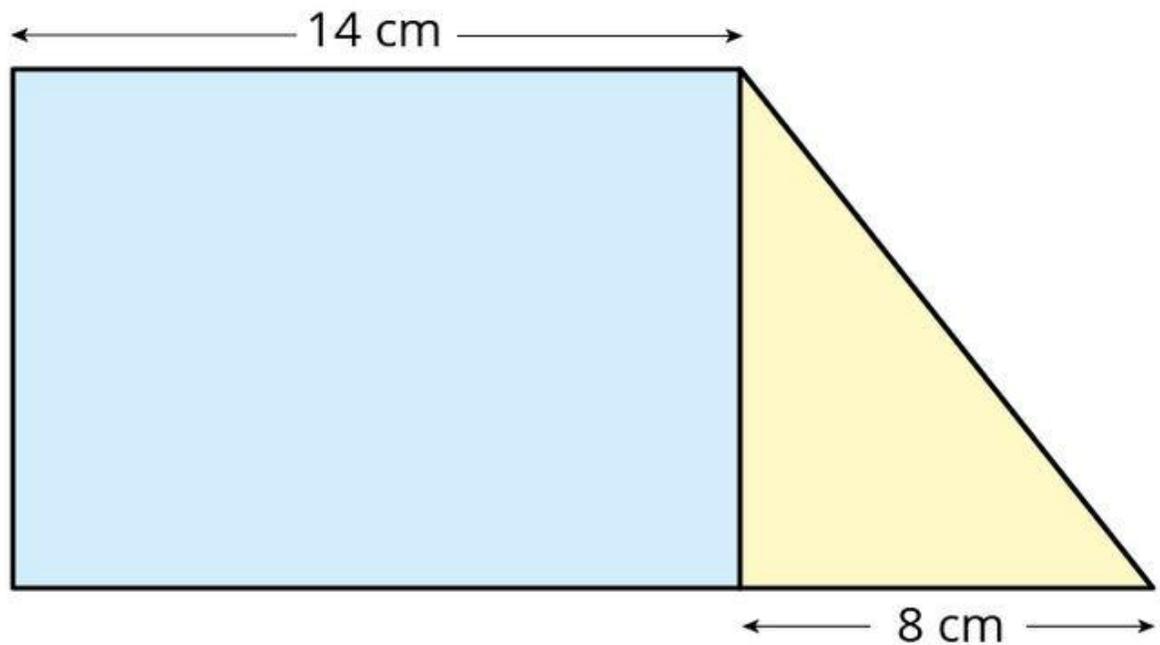
Jasem drew this shape.



What is the area of Jasem's shape?

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Moza made this shape using one rectangle and one triangle.

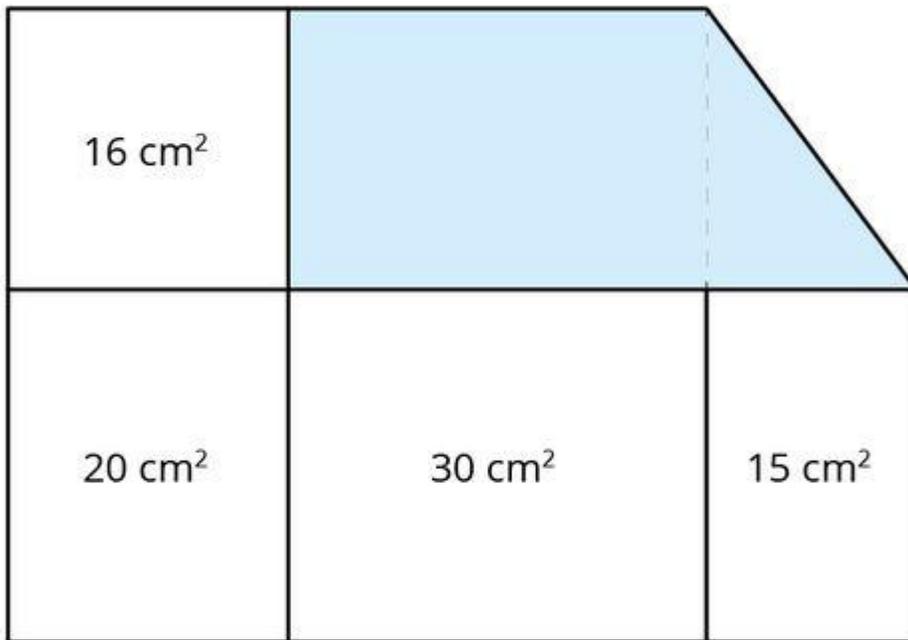


The area of the triangle is 40 cm^2 .

What is the area of the rectangle?

Mariam draws this large shape.

The large shape is made up of one square and a trapezium at the top, and three rectangles below.

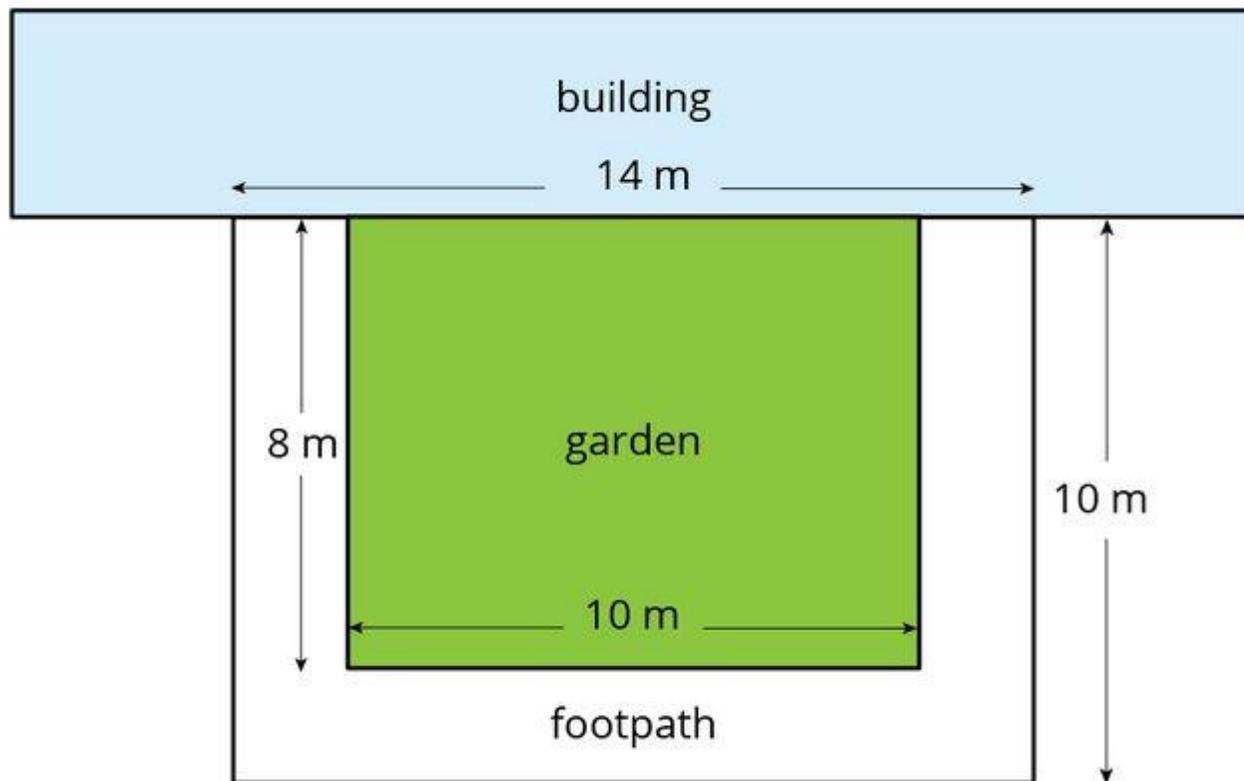


The areas of the square and the rectangles are shown.

What is the area of the shaded trapezium?

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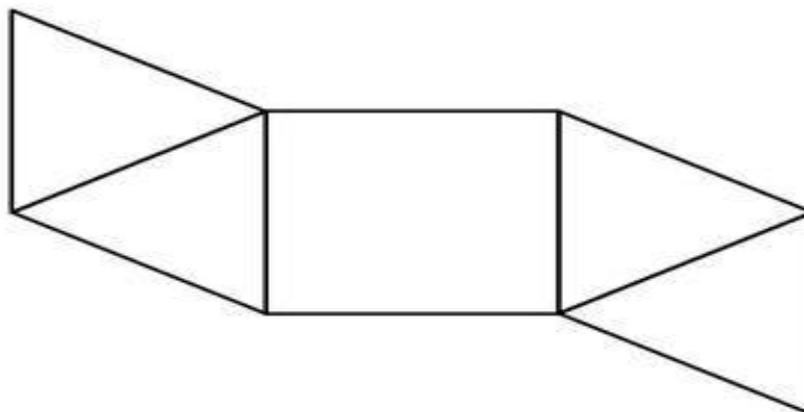
This diagram shows a footpath around three sides of a rectangular garden.



What is the total area of the footpath?

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Aysha cuts this net from a piece of paper.

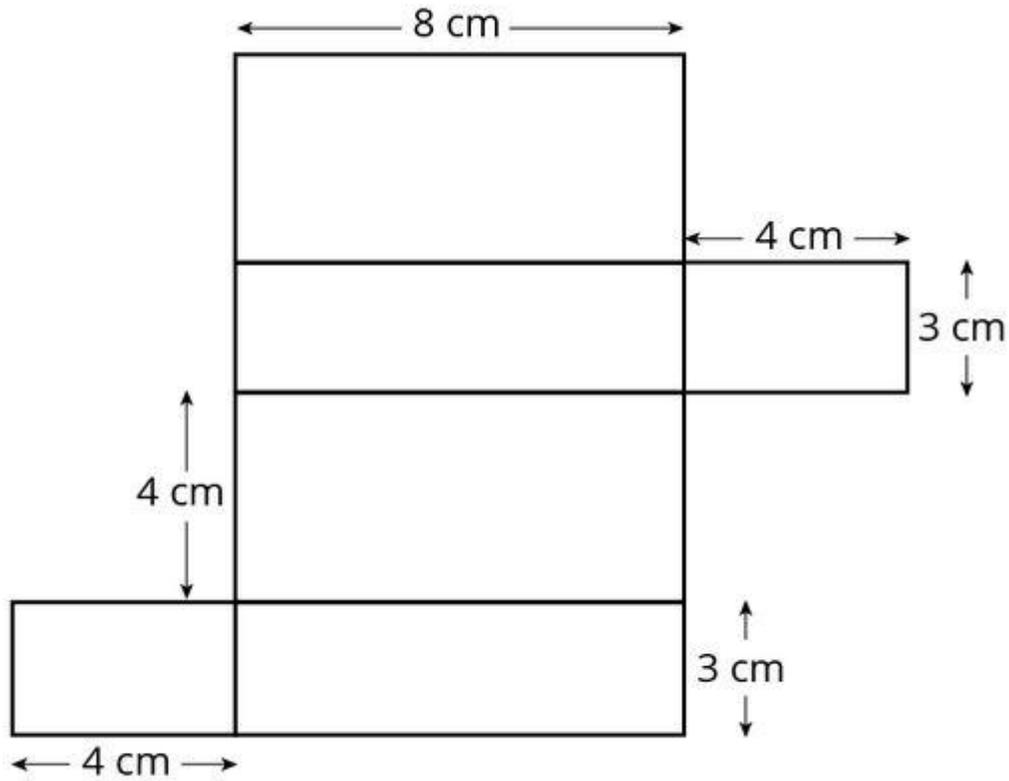


She folds the net to make a solid.

What is the solid that Aysha makes?

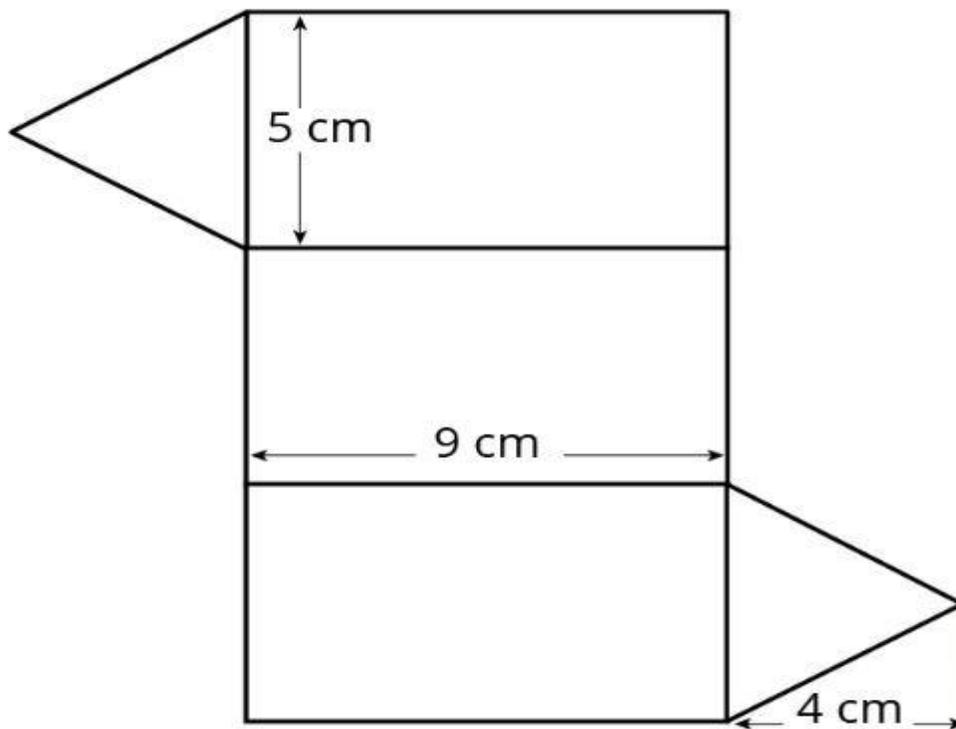
- triangular prism
- square prism
- triangular-based pyramid
- square-based pyramid

Four students are asked to calculate the volume of the solid formed by folding this net.



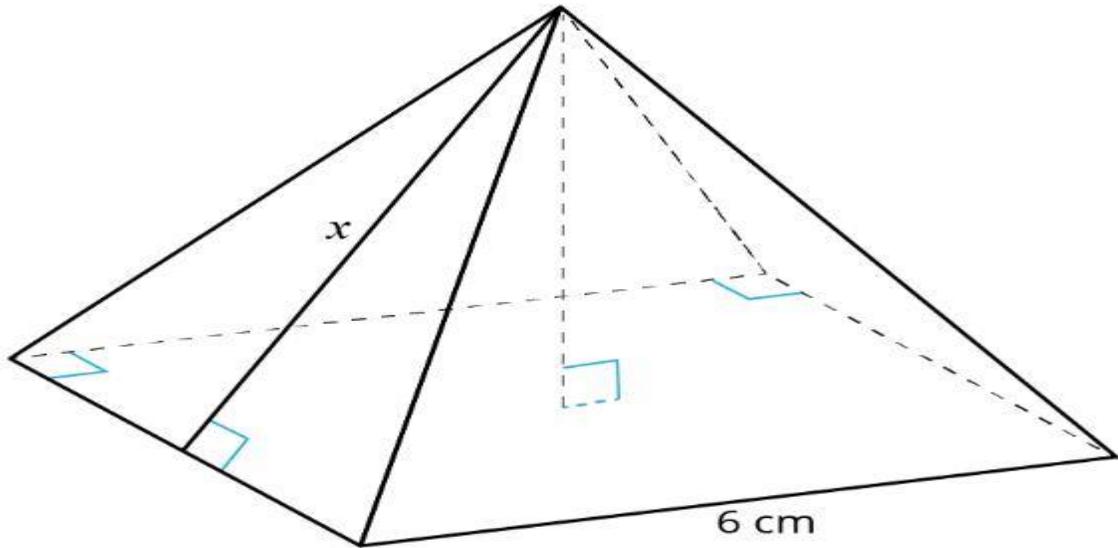
Which student has made the correct calculation?

Saif folds this net to make a triangular prism.



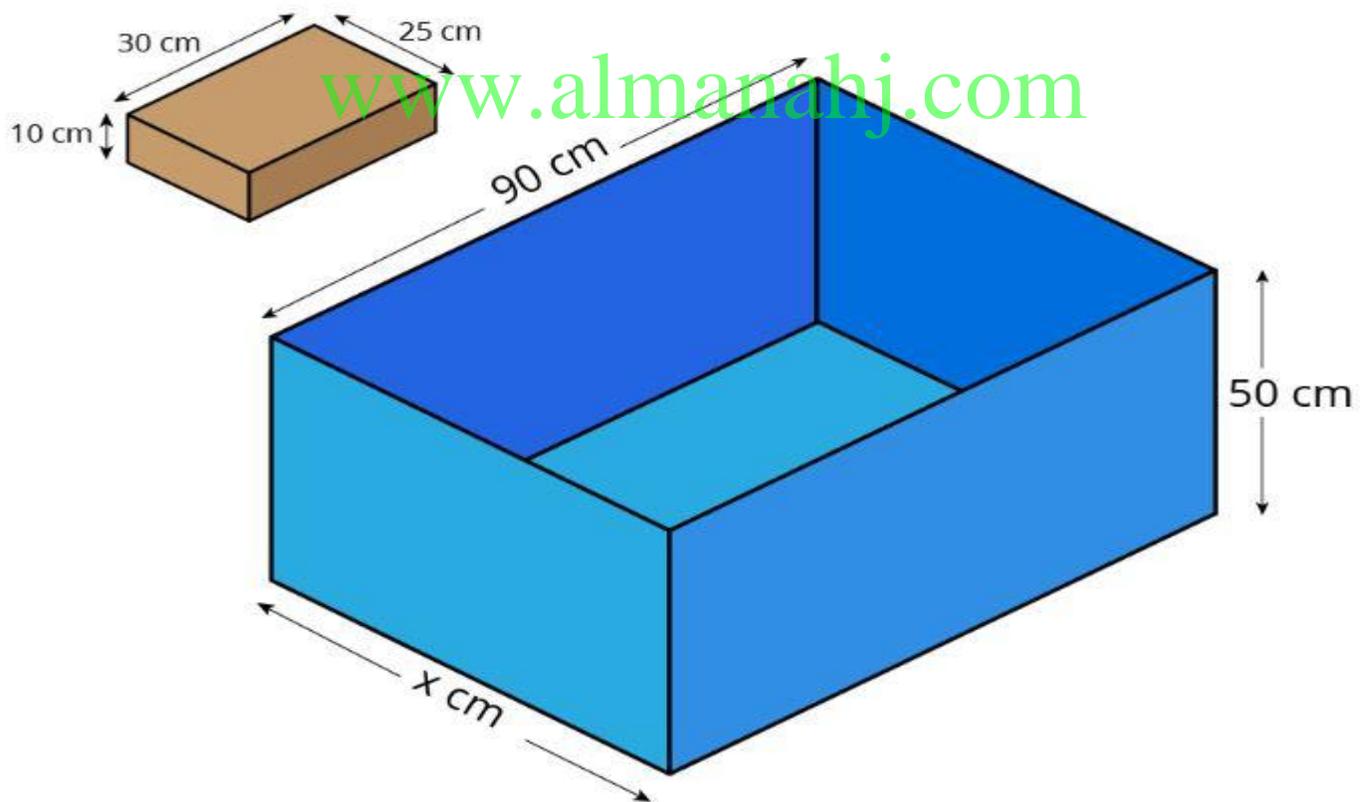
What is the volume of Saif's triangular prism?

Mariam has this square-based pyramid.
The total surface area of her pyramid is 96 cm^2 .



She draws a line on her pyramid, as shown by x .
What is the length of x ?

Fatima fills the large box with exactly 48 small boxes.



What is the width of the large box, shown by x ?

Sara has a book with 200 pages.

She takes 30 minutes to read the first 50 pages of the book.

How long will it take Sara to read the entire book?

- 60 minutes
- 120 minutes
- 150 minutes
- 180 minutes

Maths

Aminah is making Al Machboos for her family.

She has a recipe which can be used to serve 4 people.

These are some of the ingredients in the recipe:

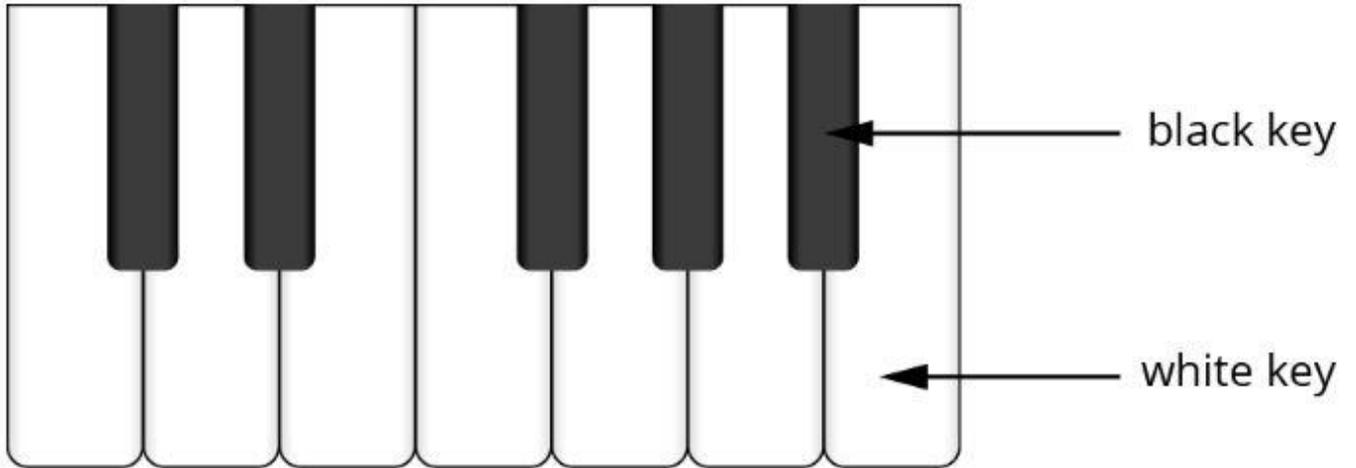
Ingredient	Amount
Saffron	$\frac{1}{8}$ teaspoon
Cinnamon	$\frac{3}{4}$ teaspoon
Turmeric	$1\frac{1}{2}$ teaspoon

Aminah needs to make enough for 12 people.

What amount of turmeric will she need?

- $1\frac{1}{2}$ teaspoons
- $2\frac{1}{4}$ teaspoons
- 3 teaspoons
- $4\frac{1}{2}$ teaspoons

This is part of a piano keyboard.



The pattern of black keys and white keys continues.

The full keyboard of this piano has 35 white keys.

How many black keys are there?

15

25

30

35

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Eman has three different cages with swallowtail butterflies.

She feeds the butterflies nectar drops each day.

The table shows the number of nectar drops she needs for each cage.

Cage	Number of butterflies in cage	Number of nectar drops each day
1	2	5
2	6	15
3	?	20

How many butterflies does Eman have in Cage 3?

8

9

10

11

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Sultan and Hamad start together and cycle around the Yas Marina circuit.

Sultan is a faster cyclist and completes 5 laps of the circuit while Hamad completes 3 laps.

How many laps of the circuit will Sultan have completed, when Hamad has completed exactly 15 laps?

9

15

17

25

Maths

Bedreya has a bag that contains six blue balls and one green ball.

She takes one ball from the bag without looking.

Which of these best describes the chance that this ball is blue?

impossible

unlikely

likely

certain

Maths



Sultan has this list of all of the Championship winning teams in the Arabian Gulf League.

Team	Number of times winning Championship	Championship winning seasons
Al-Ahli	7	1974-75, 1975-76, 1979-80, 2005-06, 2008-09, 2013-14, 2015-16
Al-Ain	12	1976-77, 1980-81, 1983-84, 1992-93, 1997-98, 1999-00, 2001-02, 2002-03, 2003-04, 2011-12, 2012-13, 2014-15
Al-Jazira	2	2010-11, 2016-17
Al-Wahda	4	1998-99, 2000-01, 2004-05, 2009-10
Al-Wasl	7	1981-82, 1982-83, 1984-85, 1987-88, 1991-92, 1996-97, 2006-07
Sharjah	5	1973-74, 1986-87, 1988-89, 1993-94, 1995-96
Total	43	

Sultan uses the number of times each team has won in the past to predict the next Championship winning team.

Which team does Sultan predict to win?

Al-Ahli

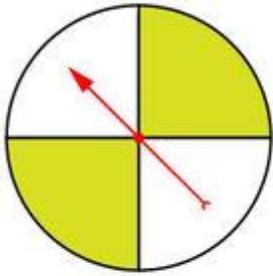
Al-Ain

Al-Jazira

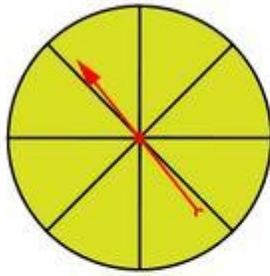
Al-Wasl

Wafa has four different spinners.

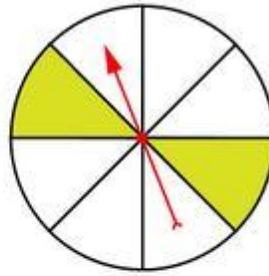
Each spinner has some green and some white sections.



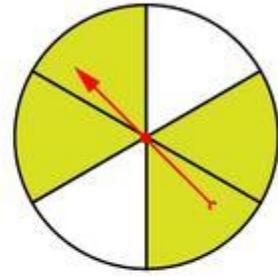
Spinner A



Spinner B



Spinner C



Spinner D

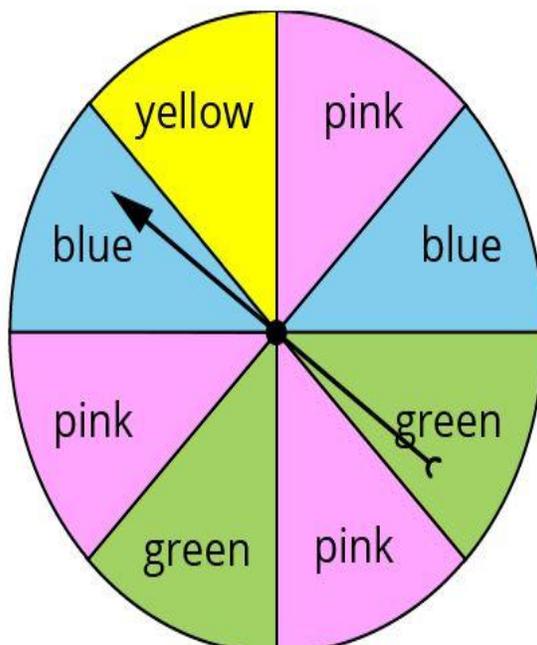
Wafa spins each spinner.

Which spinner has the **smallest** chance of landing on a green section?

- Spinner A
- Spinner B
- Spinner C
- Spinner D

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This is Rashid's spinner.



He spins his spinner 80 times and records how it lands each time.

How many times would Rashid expect his spinner to land on a blue section?

2

10

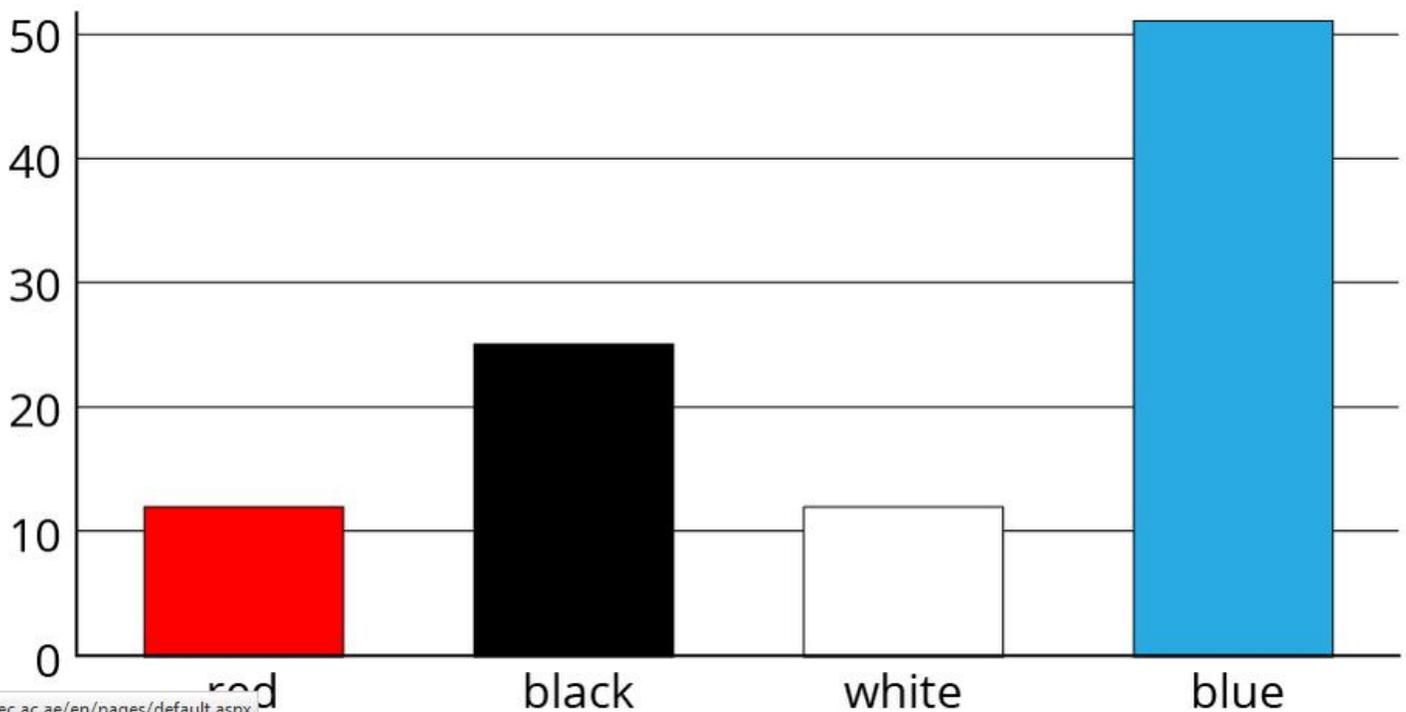
20

30

Maths

Sara has a spinner divided into eight equal sections. Each coloured section is either red, black, white or blue.

Sara spins the spinner 100 times. The results of her spins are shown in the graph.

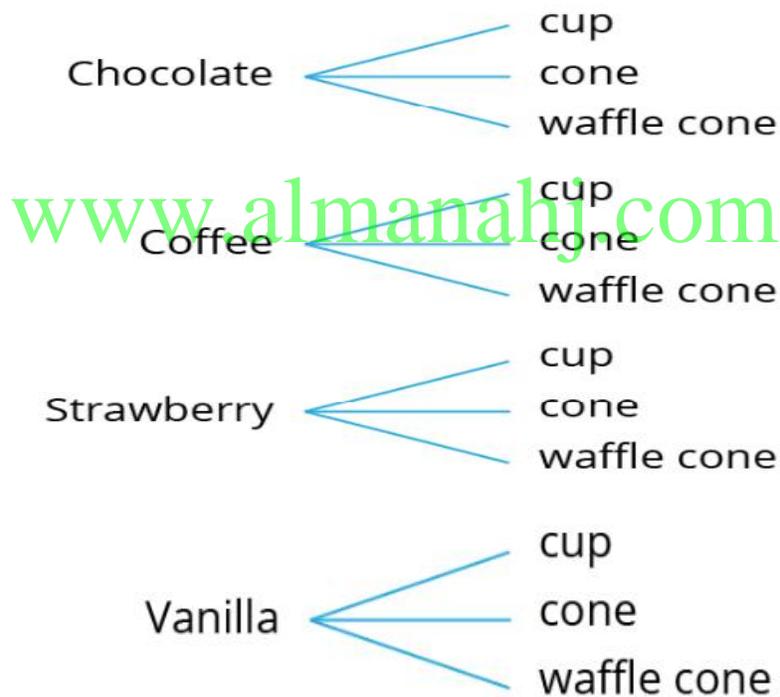


How many sections of Sara's spinner are coloured black?

- 1
- 2
- 4
- 25

Maths

Latifa sells ice creams in four different flavours – chocolate, coffee, strawberry, or vanilla.
The ice creams come in three different containers – cups, cones, or waffle cones.
This tree diagram shows the different combinations.



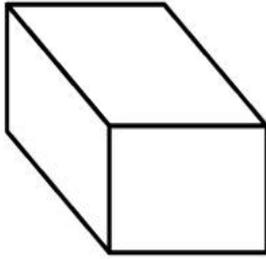
How many different combinations of ice cream flavours and containers are possible?

- 2
- 3
- 4
- 12

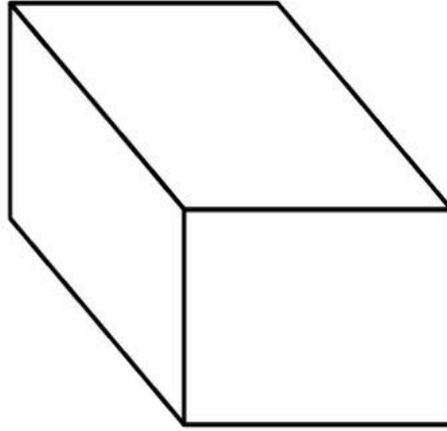
Sara has two boxes with numbered tickets.

One box has 20 tickets numbered from 1 to 20.

The other box has 100 tickets numbered from 1 to 100.



20 tickets



100 tickets

Sara takes one ticket from one box.

Which box will give Sara the greater chance of taking a ticket with the number 17?

- the box with 20 tickets
- the box with 100 tickets
- both boxes will give the same chance
- it is impossible to tell

A jar has 100 sweets in it.

The sweets are either blue, red, yellow or green, and there is an equal number of each colour.

Aminah closes her eyes and takes one sweet from the jar. Her sweet is red.

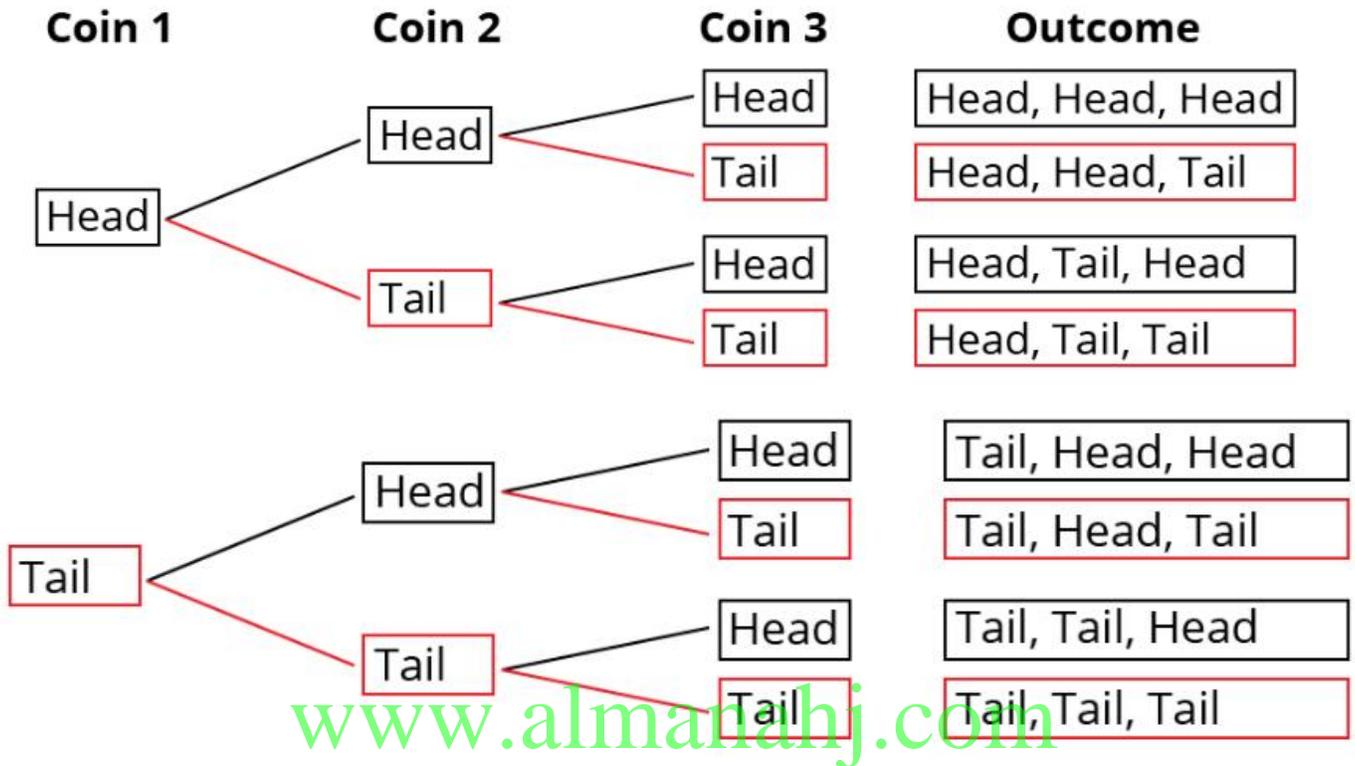
Next, Bushra closes her eyes and takes one sweet from the jar.

How likely is it that Bushra will also take a red sweet?

-
- certain
-
- more likely than Aminah
-
- equally likely
-
- less likely than Aminah
-

Eman tosses three coins.

This tree diagram shows all the possible outcomes.



What is the probability that Eman tosses three tails?

$\frac{1}{8}$

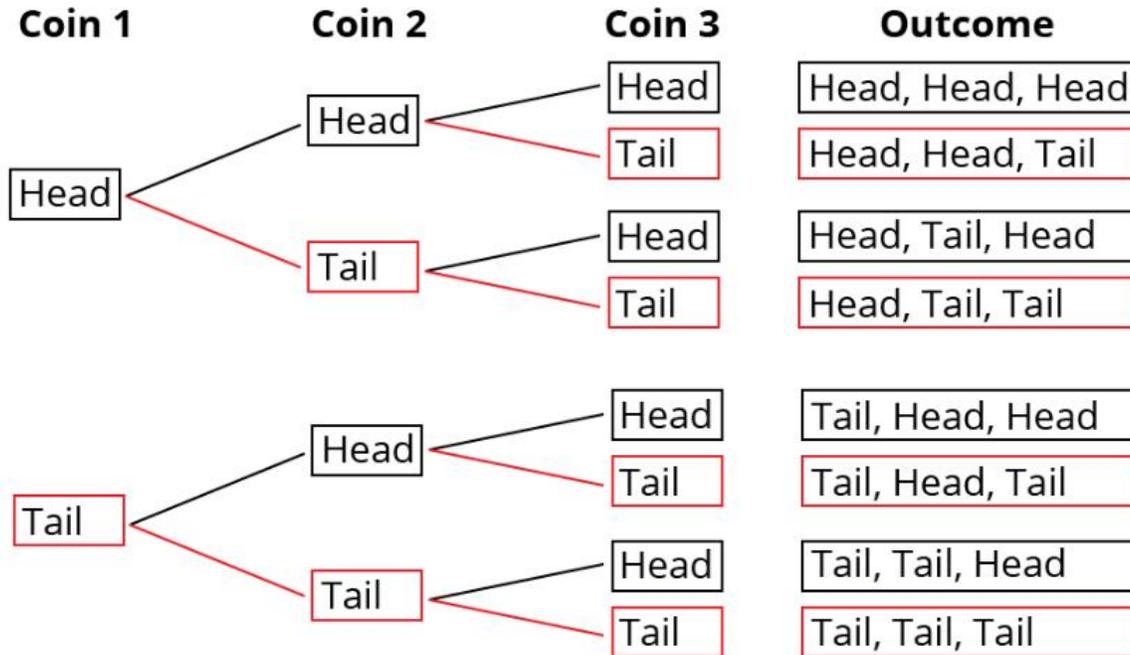
$\frac{3}{8}$

$\frac{1}{2}$

$\frac{7}{8}$

Salma tosses three coins.

This tree diagram shows all possible outcomes.



What is the probability that Salma's three tosses include two Heads and one Tail?

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$\frac{1}{8}$

$\frac{3}{8}$

$\frac{1}{2}$

$\frac{5}{8}$

CH10 statistics

1) Make a prediction using ratio

What is the probability of a student having candy for a snack?

snacks	Student
chips	15
candy	9

fruit	6
-------	---

- a) $3/10$ b) $1/5$ c) $1/2$ d) 30

2) Make a prediction using a ratio for a larger number

What is the probability of a student having fruit for a snack if there were 240 students?

snacks	Student
chips	15
candy	9
fruit	6

- a) 96 b) 48 c) 60 d) 6

3) Biased vs unbiased sample

An ice cream shop wants to know what is people's favorite dessert? It surveys every 10 customer that comes into their shop. Which sentence best describes the survey.

- a) Unbiased because the survey was random.
 b) Unbiased because the survey was convenience
 c) Biased because the survey was convenience
 d) Biased because the survey was random

4) Simple random sample

A teacher writes all the names of all the students in their class on a piece of paper and puts the paper into a hat. The teacher then mixes the papers and choices one. This is an example of what kind of survey?

- a) Convenience sample
 b) Voluntary response sample
 c) Systematic random sample
 d) Simple random sample

5) Convenience sample

A teacher wants to know what the students in their whole school like to eat as a snack. The teacher decides to survey one class from that school. This is an example of what kind of survey?

- a) Convenience sample
- b) Voluntary response sample
- c) Systematic random sample
- d) Simple random sample

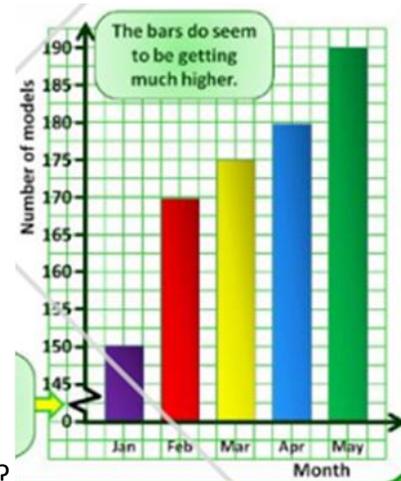
6) Voluntary response sample

A radio host asks listeners to call in to answer the question what is their favorite vacation spots. This is an example of what type of survey?

- a) Convenience sample
- b) Voluntary response sample
- c) Systematic random sample
- d) Simple random sample

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7) Identify misleading bar graph



What would be the explanation for the following misleading bar graph?

- a) The number of models is too big
- b) The number of models is too small
- c) The horizontal line does not have all months
- d) The vertical line value starts with a big gap, at 145 and with an interval of only 5.

8) Identify the correction needed to the misleading line graph below.



- a) Start the vertical axis values at 10
- b) Use a proportional scale for the vertical axis that matches the horizontal scale.**
- c) Use a scale with bigger intervals for the horizontal axis
- d) The graph is not misleading

9) The results of a survey that asked 20 teens how many hours they slept last night are shown below. The teens were split in two populations, boys and girls.

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BOYS	7	7	6	8	6	8	7	6	7	8
GIRLS	8	8	7	6	8	7	6	8	9	7

Select the correct value for the measures of center:

a)

	MEAN	MEDIAN	MODE
BOYS	7	7	7
GIRLS	7.4	7.5	8

b)

	MEAN	MEDIAN	MODE
BOYS	7.4	7.5	7
GIRLS	7	7.5	8

c)

	MEAN	MEDIAN	MODE
BOYS	7	7.5	7
GIRLS	7.4	7.5	7

d)

	MEAN	MEDIAN	MODE
BOYS	7	8	7
GIRLS	7.4	7.5	8

10) The mean median mode of the following data:

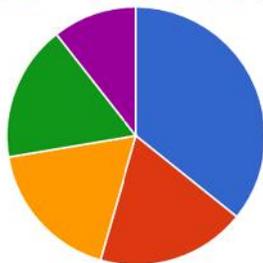
11, 17, 7, 6, 7, 4, 15, 9

- a) Mean= 9 Median = 8 Mode = 7
- b) Mean= 10 Median = 8 Mode = 7
- c) Mean= 9.5 Median = 7 Mode = 8
- d) Mean= 9.5 Median = 8 Mode = 7

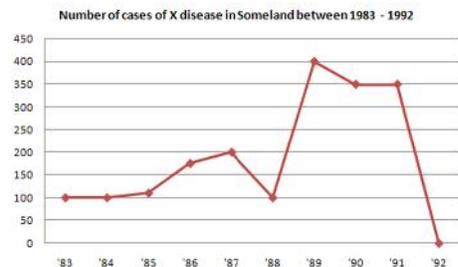
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11) Which frequency chart represents a histogram?

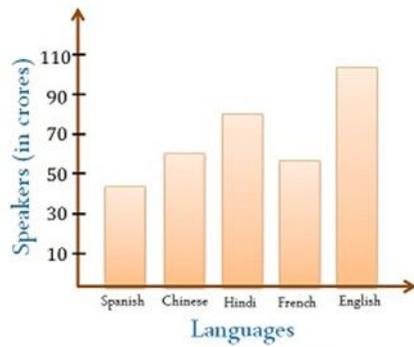
Blueberry Strawberry Banana Apple Grape



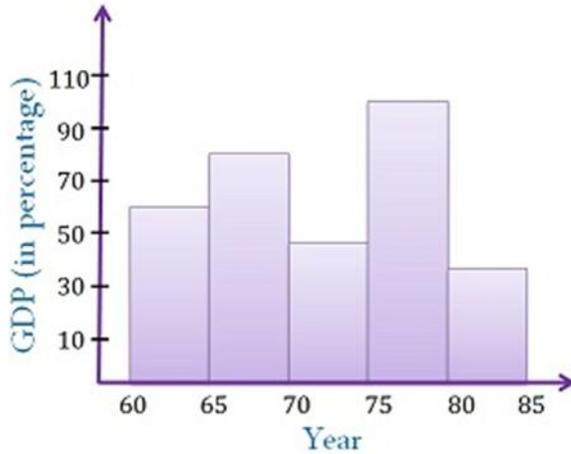
a)



b)

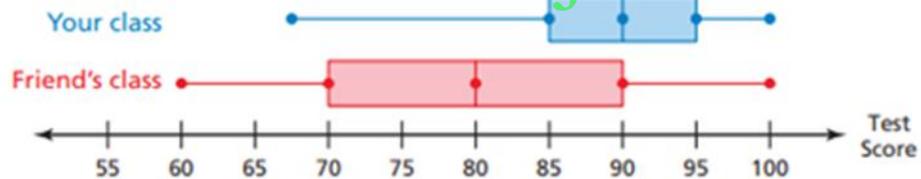


c)



d)

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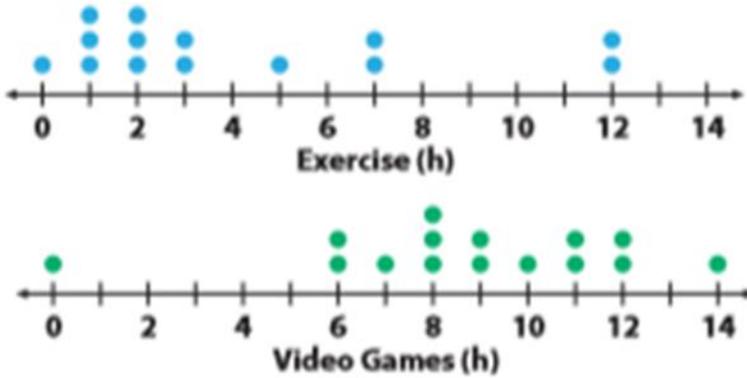
12) Double box plot

Which statement is true about the double box and whisker plot:

- a) Exactly half of the test scores in your class are between 85 and 100.
- b) Exactly 25% of the test scores in your friend's class are 80 or above.
- c) The medians are the same for both classes.
- d) The test scores on your friend's class are more spread out than the scores in your class.**

13) Double dot plot

The double box plot compares the number of hours a class of students exercises each week to the number of hours they play video games each week.



Which statement is not true about the double box plot:

- a) Most of the students exercise less than 4 hours and play video games more than 6 hours each week.
- b) The exercise range is the same as the video games range**
- c) The median for the exercise is: 2.5 hours.
- d) The median for video games is 9 hours

14) The table shows the favorite activities of 200 students. What type of graph would be most appropriate to show the data as parts of a whole?

Favorite Activity	Percent of Students
Watching TV	23%
Playing Games	30%
Browsing the Internet	15%
Gardening	17%
Shopping	15%

- a) Bar graph
- b) Line graph
- c) Pie graph**
- d) Scatter plot

15) Identify the graph that is most appropriate to represent a data that denotes the amount of money spent on military over a period of time.

- a) Bar graph
- b) Line graph**
- c) Pie chart
- d) Scatter plot

16) The table shows the kinds of pets the students have in a class. What type of graph would be most appropriate for the data?

have in a class. What data?

Pet	Frequency of the Pet
Birds	18
Cats	5
Dogs	23
Fish	17
Rabbits	6
Horse	4

- a) Bar graph
- b) Line graph
- c) Line plot
- d) Pie chart

17) A survey was conducted on the length of the names of the students in a class. What type of graph would be most appropriate to show the range of the data?

- a) Bar graph
- b) Line graph
- c) Pie graph
- d) Line plot

18) The table shows the number of cars sold in a week. Which type of graph is appropriate for the data?

Color of car	Red	White	Orange	Blue
Number of cars	15	24	7	11

- a) Line graph
- b) Double bar graph
- c) Pie graph
- d) Line plot

19) The table shows the monthly average earnings (in thousands of dirhams) for men and women. Which type of graph would be most appropriate for the data?

Year	1998	1999	2000	2001
Men	28.9	29.3	29.6	30.2
Women	19.5	20.4	22.3	22.4

- a) Line graph
- b) Double bar graph

- c) Pie graph
- d) Line plot

20) The table shows the school enrollment between 1992 to 1996. Which type of graph is appropriate for the data?

Year	Number of students
1992	65
1993	85
1994	70
1995	70
1996	75

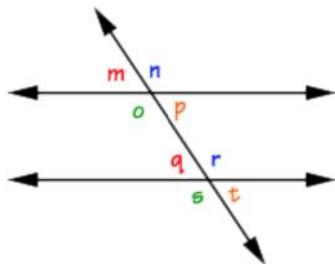
- a) Bar graph
- b) Line graph**
- c) Pie graph
- d) Scatter plot

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CH7 geometric figures

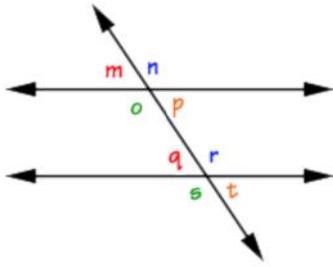
1) Vertical angles

What is a set of vertical angles?



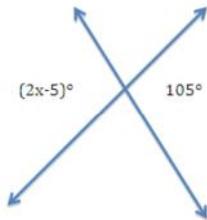
- a) m and n
- b) p and q
- c) m and t
- d) n and o**

2) Adjacent angles



- a) m and n b) p and q c) m and t d) n and o

3) Solve for x in vertical angles

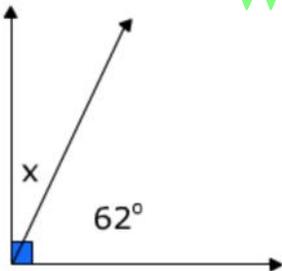


- a) x=50 b) x=55 c) x=25 d) x=100

4) Complementary angles

What is the measure of angle x?

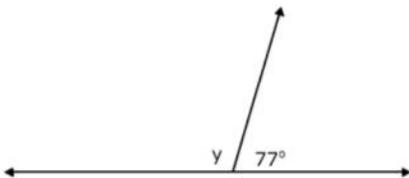
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- a) 28 degrees b) 18 degrees c) 90 degrees d) 62 degrees

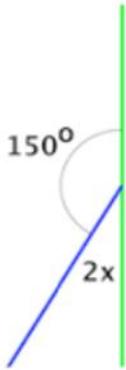
20) Supplementary angles

What is the measure of angle y?



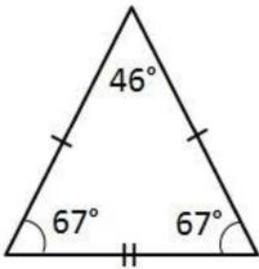
- a) 100 b) 113 c) 103 d) 180

- 5) Solve for x in complementary or supplementary angles
What is the value of x ?



- a) 30 **b) 15** c) 10 d) 16

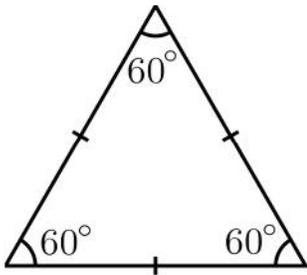
- 6) Classify triangle for its sides
What is this type of triangle?



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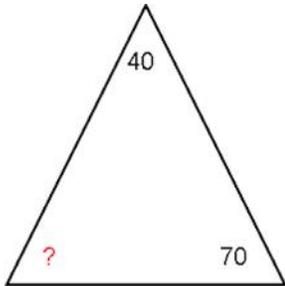
- a) Equilateral triangle
b) Isosceles triangle
c) Scalene triangle
d) Obtuse triangle

- 7) Classify triangle for its angles



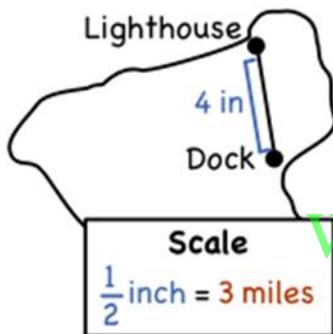
- a) Obtuse triangle
b) Right-angled triangle
c) Equiangular triangle
d) Obtuse triangle

8) Solve for missing angle



- a) 30
- b) 60
- c) 100
- d) 70

9) Actual distance on map from the Lighthouse to Dock is



- a) 24 miles
- b) 12 inches
- c) 1.5 miles
- d) 8 miles

10) Solve using scale whole number

A model of a tree is made using a scale of 1 centimeter = 3 meters. What is the height of the actual tree if the height of the model is 11 centimeters?

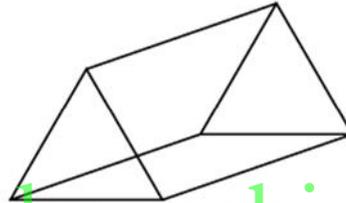
- a) 30 meters
- b) 33 centimeters
- c) 11 meters
- d) 33 meters

11) Solve using scale with fraction

What will be the length of a car prototype like the one below, if the scale 1 mm to $\frac{1}{4}$ mm?

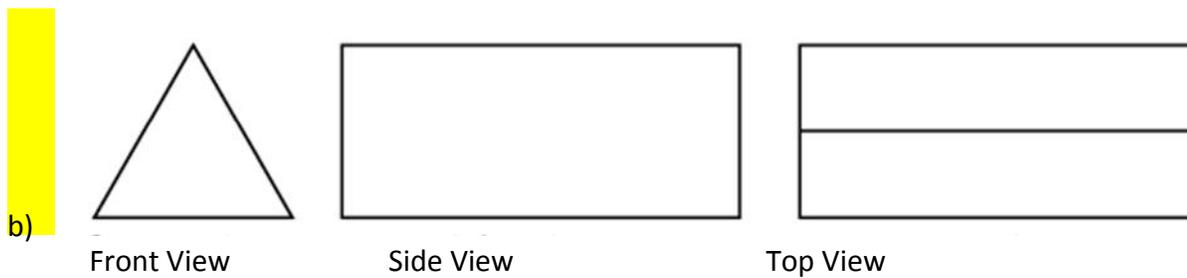
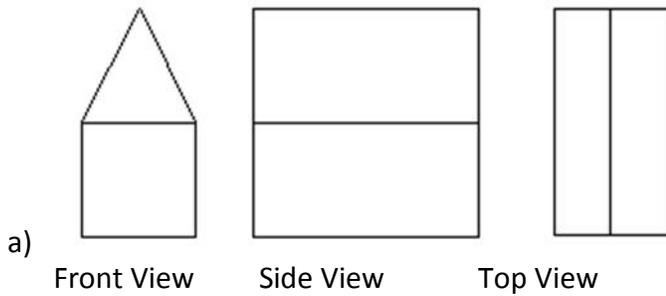


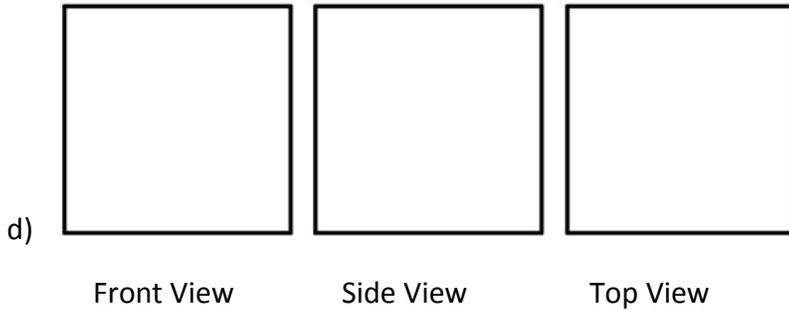
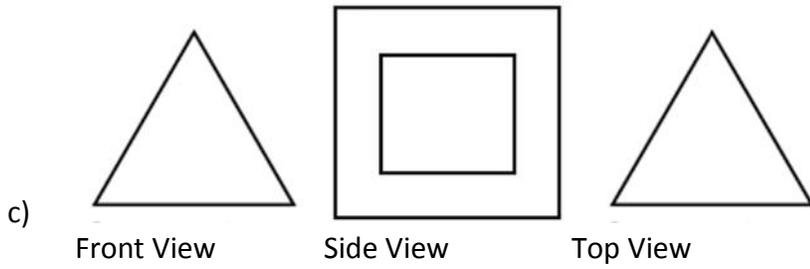
- a) 1200 mm
- b) 215 mm**
- c) 3440 mm
- d) 75 mm



12) Top side front view of 3d shapes

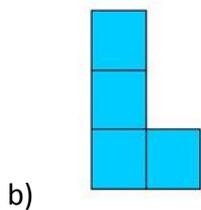
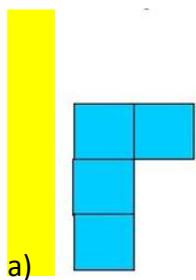
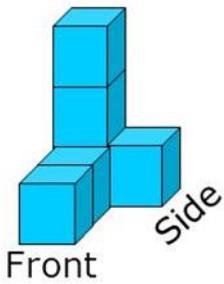
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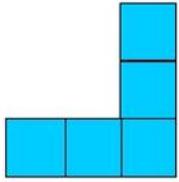


13) Cubes with top front and side views
 What is the view from the top side?

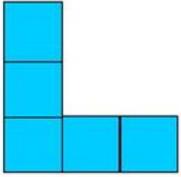
www.almanahj.com



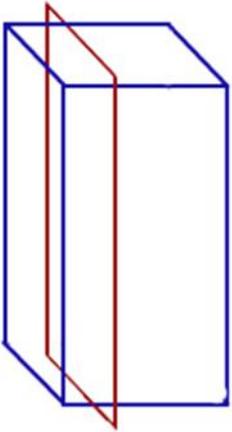
c)



d)



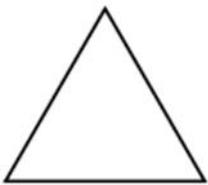
14) Slicing vertical the 3- D shape



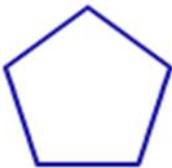
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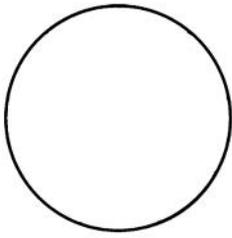
we get the following 2-D shape:

a)



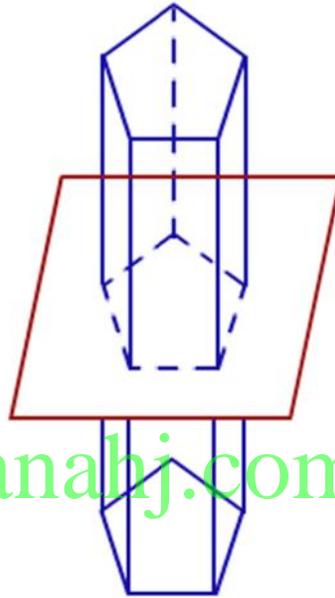
b)





c)

d)



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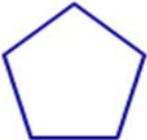
15) Horizontal slice for the following 3-D shape



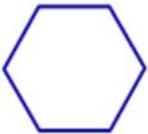
a)



b)



c)



d)



16)

The name of this 3d shape is:

- a) Rectangular prism
- b) Square pyramid
- c) Triangular prism**
- d) Triangular prism

17) Which 3-D shape has six rectangular faces?

- a) Rectangular prism**
- b) Cone
- c) Cylinder
- d) Triangular prism

18) How many edges does a cylinder have?

- a) Two**
- b) Three
- c) Four
- d) None

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19) How many vertices does a cube have?

- a) Six
- b) Four
- c) Eight**
- d) Two

20) Which of the following 3-D shapes have no vertices or edges?

- a) Cone
- b) Sphere**
- c) Cylinder
- d) Cube

With my best wishes for success

Grade 7 Probability Revision Questions

1. If you rolled a 6-sided dice, what is the probability of rolling a 3?

- A. $1/6$
- B. $2/3$
- C. $3/6$
- D. $5/6$

2. If you flipped a coin what is the probability that it will land on drawing?

- A. $0/2$
- B. $1/4$
- C. $3/4$
- D. $1/2$

3. If you rolled a cube with faces numbered 1 to 6, what is the probability of rolling an even number

- A. $2/6$
- B. $1/2$
- C. $1/6$
- D. $5/6$

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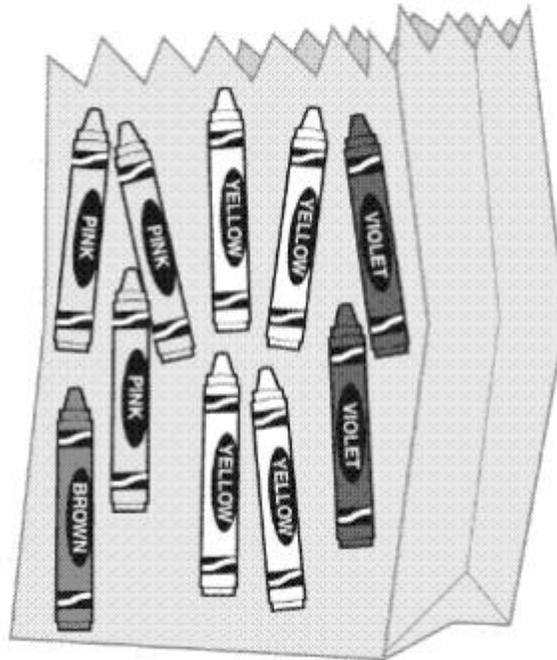
4. A lolly bag contains 2 red, 3 green and 2 blue gum balls. What is the probability of selecting a green one?

- A. $2/7$
- B. $5/7$
- C. $4/7$
- D. $3/7$

5. There are red, yellow and green bubble gums in a bag. What is the probability of selecting a blue one?

- A. $1/4$
- B. 1
- C. $0/3$
- D. $2/3$

6. Mohammed has some crayons in the bag.



Mohammed will choose a crayon from the bag without looking. Which color is he MOST likely to choose?

- A. yellow
- B. violet
- C. pink
- D. brown

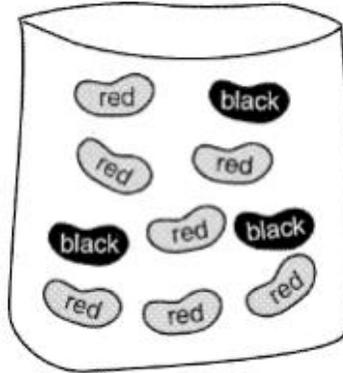
7. The table below shows the number of each color of Ahmed's pencils

Color	Number
blue	2
green	1
red	2
yellow	7

If he chooses one pencil without looking, what color is he LEAST likely to choose?

- A. Blue
- B. Green
- C. Red
- D. Yellow

8. Erin has a bag with 7 red jelly beans and 3 black jelly beans. She will randomly select one jelly bean at a time from her bag and eat it.



If the first jelly bean she selects is black, what is the probability that the second jelly bean she selects will also be black?

- A. $\frac{1}{5}$
B. $\frac{2}{9}$
C. $\frac{3}{7}$
D. $\frac{3}{10}$

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9. A fair number cube with faces numbered from 1 to 6 is rolled. What is the probability that the number rolled is some number other than 6?

- A. $\frac{5}{6}$
B. $\frac{1}{2}$
C. $\frac{1}{3}$
D. $\frac{1}{6}$

10. A fair number cube has sides numbered 1 through 6. When the cube is rolled 100 times, which would be MOST likely to occur?

- A. All the numbers rolled would be odd.
B. The number 6 would never be rolled.
C. The number 7 would be rolled at least once.
D. An even number would be rolled 50 times.

11. A fair die is rolled.

Problems

Work Space

Find all possible outcomes Answer: _____	
Find the probability of showing an even number Answer: _____	
Find the probability of showing an odd number Answer: _____	
Find the probability of showing a prime number Answer: _____	

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ANSWERS

1. A	2. D	3. B	4. D	5. C	6. A	7. B	8. B
9. A	10. D						

11.

Find all possible outcomes Answer: {1, 2, 3, 4, 5, 6}	
Find the probability of showing an even number Answer: $\frac{1}{2}$	
Find the probability of showing an odd number Answer: $\frac{1}{2}$	
Find the probability of showing a prime number Answer: $\frac{1}{2}$	