Area and volume formulas for all shapes pdf printable free

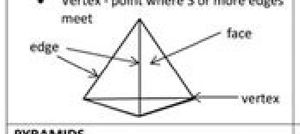
Name Date

GEOMETRY QUICK GUIDE 5: 3D SHAPE FORMULAS

3D SHAPES

All 3d shapes can be described in terms of their faces, vertices and edges.

- Face - a flat or curved surface
- Edge - line where 2 faces meet
- Vertex - point where 3 or more edges meet

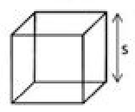


CUBE

Volume = s^3

Surface area = $6s^2$

where s is the length of one side

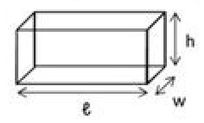


CUBOID (RECTANGULAR PRISM)

Volume = ℓ x w x h

Surface area = 2ℓh + 2ℓw + 2wh

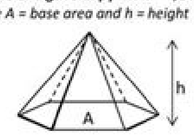
where ℓ = length, w = width, h = height



PYRAMIDS

Volume of a general pyramid = $^1/_3$ Ah

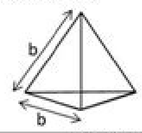
where A = base area and h = height



REGULAR TETRAHEDRON

Volume = $b^3/6\sqrt{2}$

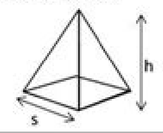
Surface area = $\sqrt{3}b^2$



SQUARE PYRAMID

Volume = $^1/_3 s^2h$

Surface area = $s^2 + 2sh$

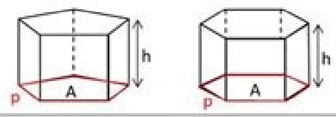


PRISMS

Volume of any prism = Ah

Surface area of a closed prism = 2A + (h x p)

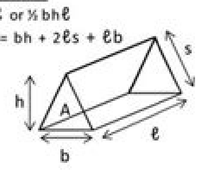
where A = base area, h = height, p = base perimeter



TRIANGULAR PRISM

Volume = A ℓ or ½ bhℓ

Surface area = bh + 2ℓs + ℓb



SPHERES

Volume = $^4/_3 \pi r^3$

Surface area = $4\pi r^2$

RIGHT CYLINDER

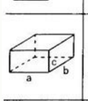
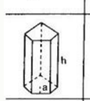
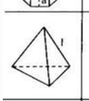
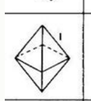
Volume = $\pi r^2 h$

Surface area = $2\pi r\ (r + h)$

RIGHT CIRCULAR CONE

Volume = $^1/_3 \pi r^2 h$

Surface area = $\pi r\ (r + s)$

	**Cuadrado** $A = l^2$	**Triángulo** $A = \frac{1}{2} \cdot B \cdot h$	
	**Rectángulo** $A = B \cdot h$	**Romboide** $A = B \cdot h$	
	**Rombo** $A = \frac{1}{2} D \cdot d$	**Trapecio** $A = \frac{B + b}{2} \cdot h$	
	**Polígono regular** $A = \frac{P \cdot a}{2}$	**Círculo** $A = \pi R^2$ $L = 2\pi R$	
	**Corona circular** $A = \pi(R^2 - r^2)$	**Sector circular** $A = \frac{\pi R^2}{360} n$	
	**Cubo** $A = 6 l^2$ $V = l^3$	**Cilindro** $A = 2\pi R(h + R)$ $V = \pi R^2 \cdot h$	
	**Ortoedro** $A = 2(ab + ac + bc)$ $V = abc$	**Cono** $A = \pi R \cdot (g + R)$ $V = \frac{1}{3} \pi R^2 \cdot h$	
	**Prisma recto** $A = P(h + a)$ $V = A_b \cdot h$	**Tronco de cono** $A = \pi[g(R + r) + R^2 + r^2]$ $V = \frac{1}{3} \pi h(R^2 + r^2 + Rr)$	
	**Tetraedro regular** $A = l^2\sqrt{3}$ $V = \frac{l^3 \cdot \sqrt{2}}{12}$	**Esfera** $A = 4\pi R^2$ $V = \frac{4}{3} \pi R^3$	
	**Octaedro regular** $A = 2 l^2\sqrt{3}$ $V = \frac{l^3 \cdot \sqrt{2}}{3}$	**Huso - Cuña esférica** $A = \frac{4\pi R^2}{360} \cdot n$ $V = \frac{4}{3} \cdot \frac{\pi R^3}{360} \cdot n$	
	**Pirámide recta** $A = \frac{1}{2} P \cdot (a + a')$ $V = \frac{1}{3} A_b \cdot h$	**Casquete esférico** $A = 2\pi R \cdot h$ $V = \frac{1}{3} \pi h^2 \cdot (3R - h)$	
	**Tronco de pirámide** $A = \frac{1}{2}(P + P') \cdot a' + A_b + A_b'$ $V = \frac{1}{3} h(A_b + A_b' + \sqrt{A_b A_b'})$	**Zona esférica** $A = 2\pi R \cdot h$ $V = \frac{\pi h}{6}(h^2 + 3r^2 + 3r'^2)$	

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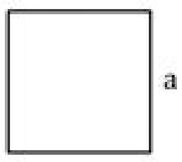
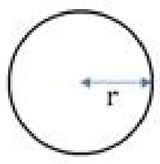
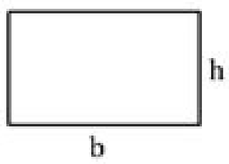
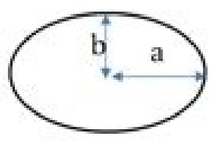
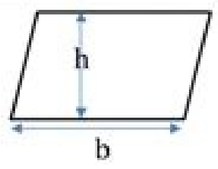
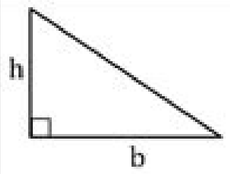
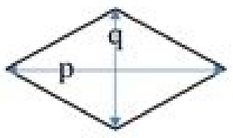
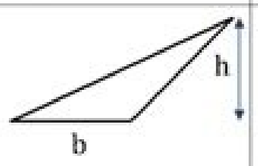
AREA OF COMMON 2D SHAPES

SHAPE	FORMULA	SHAPE	FORMULA
	SQUARE $A = a^2$		CIRCLE $A = \pi r^2$
	RECTANGLE $A = bh$		ELLIPSE $A = \pi ab$
	PARALLELOGRAM $A = bh$		RIGHT TRIANGLE $A = ½\ bh$
	RHOMBUS $A = ½\ pq$		TRIANGLE $A = ½\ bh$
	TRAPEZOID $A = ½\ (a + b)\ h$		EQUILATERAL TRIANGLE $A = \frac{\sqrt{3}}{4} b^2$

Where A is the area of the 2D shape.

3D GEOMETRY FORMULAS

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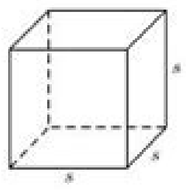
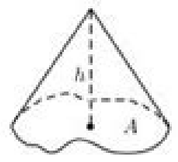
CUBE

s = side
Volume: $V = s^3$
Surface Area: $S = 6s^2$



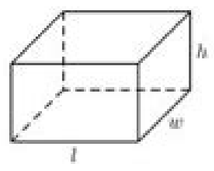
GENERAL CONE OR PYRAMID

A = area of base, h = height
Volume: $V = \frac{1}{3}Ah$



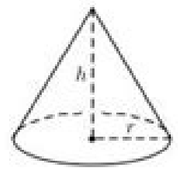
RECTANGULAR SOLID

l = length, w = width,
h = height
Volume: $V = lwh$
Surface Area:
$S = 2lw + 2lh + 2wh$



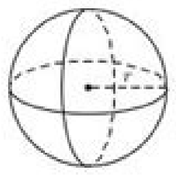
RIGHT CIRCULAR CONE

r = radius, h = height
Volume: $V = \frac{1}{3}\pi r^2 h$
Surface Area:
$S = \pi r\sqrt{r^2 + h^2} + \pi r^2$



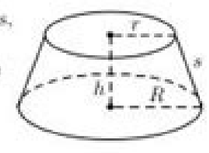
SPHERE

r = radius
Volume: $V = \frac{4}{3}\pi r^3$
Surface Area: $S = 4\pi r^2$



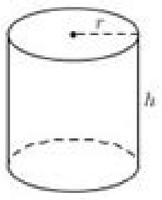
FRUSTUM OF A CONE

r = top radius, R = base radius,
h = height, s = slant height
Volume: $V = \frac{\pi}{3}(r^2 + rR + R^2)h$
Surface Area:
$S = \pi s(R + r) + \pi r^2 + \pi R^2$



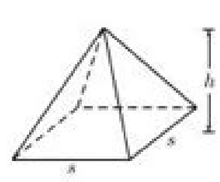
RIGHT CIRCULAR CYLINDER

r = radius, h = height
Volume: $V = \pi r^2 h$
Surface Area: $S = 2\pi rh + 2\pi r^2$



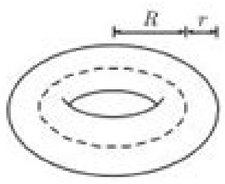
SQUARE PYRAMID

s = side, h = height
Volume: $V = \frac{1}{3}s^2 h$
Surface Area:
$S = s(s + \sqrt{s^2 + 4h^2})$



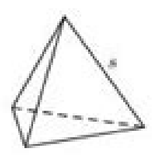
TORUS

r = tube radius,
R = torus radius
Volume: $V = 2\pi^2 r^2 R$
Surface Area: $S = 4\pi^2 rR$

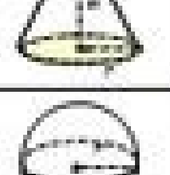
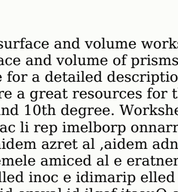
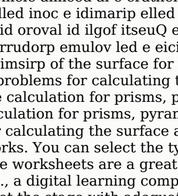
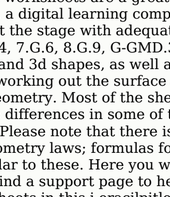
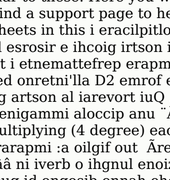


REGULAR TETRAHEDRON

s = side
Volume: $V = \frac{1}{12}\sqrt{2}s^3$
Surface Area: $S = \sqrt{3}s^2$



VOLUME & SURFACE AREA FORMULAS

NAME	FIGURE	SURFACE AREA	VOLUME
CUBE		$SA = 6 \cdot s^2$	$V = s^3$
CUBOID		$SA = 2 \cdot (a \cdot b + a \cdot c + b \cdot c)$	$V = a \cdot b \cdot c$
PRISM		$SA = 2 \cdot$ base area + lateral area	$V =$ base area $\cdot h$
PYRAMID		$SA =$ base area + lateral area	$V = \frac{1}{3} \cdot$ base area $\cdot h$
CYLINDER		$SA = 2\pi r^2 + 2\pi rh$	$V = \pi r^2 h$
CONE		$SA = \pi r^2 + \pi rs$	$V = \frac{1}{3}\pi r^2 h$
SPHERE		$SA = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$

Area and volume sheet. Area and volume formula sheet pdf. Area and volume formulas sheet. Volume and area formulas for all shapes.

Here is a graphic preview for all surface and volume worksheets. you can select different variables to customize these surface and volume worksheets for your needs. surface and volume worksheets are created randomly and will never repeat so that you have an endless supply of surface quality & volume worksheets to be used in class or at home. we have identified solid figures, surface and volume of prisms and cylinders, surface and volume of pyramids and cones, and surface and volume of spheres for your oo. our surface & volume worksheets are free to download, easy to go, and very flexible. These surfaces and volume worksheets are a great resource for children in 5th, 6th degree, 7th degree and 8th degree. click here for a detailed description of all surface and volume worksheets. click on the image to take to that surface area & volume worksheets. surface and volume scope these surface areas and volume handles have definitions, facts and useful formulas for cubes, rectangular prisms, general prisms, cylinders, pyramids, cones and spheres. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. identify the worksheets of solid figures these surface and volume worksheets will produce twelve problems to identify different types of solid figures. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Worksheets of the surface area of the prisms and cylinders these surfaces and worksheets of the volume will produce problems for the calculation of the surface area for the prisms and cylinders. you can select the units of measurement for each problem. These worksheets are a great resources for the fifth, 6th emulov emulov led oloclac li rep imelborp onnarrudorp emulov e eicifrepus id oroval id ilgof itseuQ irdnilic ied e imsirp ied emulov led oroval id ilgoF .odarg °Â 01 e ,odarg °Â 9 ,odarg °Â 8 ,odarg °Â 7 li rep imelborp onnarrudorp emulov led e eicifrepus alled oroval id ilgof itseuQ eicifrepus alled inoc e irdnilic id oroval id ilgoF .eratnemele amiced al e eratnemele anon al ,aidem azret al ,aidem adnoces al ,eratnemele a6 ,atniuq al rep asrosir amitto'nu onos oroval id ilgof itseuQ .amelborp nucsaic rep enoizarusim id Ātinu el eranoizeles elibissop Ā .inoc e idimarip rep emulov led oloclac li rep imelborp onnarrudorp emulov led e eicifrepus alled oroval id ilgof itseuQ emulov id inoc e idimarip id oroval id ilgoF .eratnemele amiced al e eratnemele anon al ,aidem azret al ,aidem adnoces al ,eratnemele a6 ,atniuq al rep asrosir amitto'nu onos oroval id ilgof itseuQ .amelborp nucsaic rep enoizarusim id Ātinu el eranoizeles elibissop Ā .inoc e idimarip rep eicifrepus alled oloclac li rep imelborp onnarrudorp emulov led e eicifrepus alled oroval id ilgof itseuQ eicifrepus alled inoc e idimarip elled oroval id ilgoF .eratnemele amiced al e eratnemele anon al ,aidem azret al ,aidem adnoces al ,eratnemele a6 ,atniuq al rep asrosir amitto'nu onos oroval id ilgof itseuQ .amelborp nucsaic rep enoizarusim id Ātinu el eranoizeles elibissop Ā .idimarip e imsirp rep emulov led oloclac li rep imelborp onnarrudorp emulov e eicifrepus id oroval id ilgof itseuQ emulov id ilgoF IDIMARIP E IMSIRP .eratnemele amiced al e eratnemele anon al ,aidem azret al ,aidem adnoces al ,eratnemele a6 ,atniuq al rep asrosir amitto'nu onos oroval id ilgof itseuQ .amelborp nucsaic rep enoizarusim id Ātinu el eranoizeles elibissop Ā .idimarip e imsirp rep eicifrepus alled oloclac li rep imelborp onnarrudorp emulov led e eicifrepus alled oroval id ilgof itseuQ eicifrepus alled oroval id ilgoF IDIMARIP E IMSIRP .eratnemele amiced al e eratnemele anon al ,aidem azret al ,aidem adnoces al ,eratnemele a6 ,atniuq al rep asrosir amitto'nu onos oroval id ilgof itseuQ .amelborp nucsaic rep enoizarusim id Ātinu el eranoizeles elibissop Ā .irdnilic e imsirp of the surface for cylinders and cones. You can select the measurement units for each problem. These work sheets are an excellent resource for the fifth, 6th elementary, the second average, the third grade, the ninth elementary and the tenth grade. Cylinders and cones of volume sheets these surface and volume worksheets will produce problems for calculating the volume per per per and cones. You can select the units of measurement for each problem. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Prisms, Pyramids, Cylinders and Cones These surface and volume worksheets will produce problems for surface calculation for prisms, pyramids, cylinders and cones. You can select the units of measurement for each problem. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Prisms, Pyramids, Cylinders and Cones These surface and volume worksheets will produce problems for volume calculation for prisms, pyramids, cylinders and cones. You can select the units of measurement for each problem. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Spheres Surface Area and Volume Worksheets These surfaces and worksheets of the volume will produce problems for calculating the surface and volume for the spheres. You can select the units of measurement for each problem. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Solid worksheet networks These surfaces and volume worksheets will cause problems to identify and sketch solid networks. You can select the types of solids to work with. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Worksheets of similar solids These surface and volume worksheets will produce problems to identify and sketch similar solids. You can select the types of solids to work with. These worksheets are a great resources for the fifth, 6th degree, 7th degree, 8th degree, 9th degree, and 10th degree. Click here for more worksheets 2202©Â 2202©Â .egelloc led enoizacifinaip alla enoizaripsi onibmab led emon lad Ātilairotineg allen rentrap ortsov II Networks Networks Inc. All rights reserved. Sandbox Learning is part of Sandbox & Co., a digital learning company. Bridge the gap between learning and doing with these free printable volume worksheets. Calculating the volume of 3D shapes is a vital skill that students in grade 4 through high school are expected to acquire. Volume is nothing but the measure of how much space an object occupies, and is expressed in cubic units. Set the stage with adequate practice using these pdfs on counting cubes, step up to finding the volume of 3D solid shapes like cubes, prisms, pyramids, cones, cylinders, compound shapes and much more. Instantly verify your answers with the answer key. These worksheets are recommended for students of grades 4 through high school. CCSS: 5.MD.4, 7.G.6, 8.G.9, G-GMD.3 Welcome to the Math Salamanders' Geometry Cheat Sheet area. Here you will find a range of different Geometry quick reference sheets which will help you to answer a range of geometry questions. Here you will find our online geometry support page about different Geometry formulas, including properties of angles, 2d and 3d shapes, as well as some common formulas to help you to work out area and volumes. Using these sheets will help your child to: identify 2d shapes and know what special properties they have; identify a range of 3d shapes, and know how many faces, edges and vertices they have; know the common formulas for 2d shapes; know the formulas for working out the surface areas and volumes of a range of 3d shapes. All the Geometry cheat sheets in this section will help you to answer and learn your key geometry facts. Here are our selection of geometry quick reference sheets for helping you learn your geometry facts. Each cheat sheet contains facts and information about one aspect of geometry. Most of the sheets have both a color and also a black and white version available. Cheat Sheet 1 contains the following information about angles. types angles: right, acute, obtuse, reflex; angles in a triangle; angles in a quadrilateral; angles at a point; interior angles of regular polygons. There is a US and a UK version of this sheet due to the differences in some of the shapes. Cheat Sheet 2 contains the following information about 2d shapes: types and properties of triangles; types and properties of quadrilaterals; properties of regular polygons; Cheat Sheet 3 contains the following information about 3d shapes: types of 3d shapes; properties of 3d shapes: faces, edges and vertices. Please note that there is some disagreement over the definitions and properties of 3d shapes. Some mathematicians allow a face to be curved and some do not. Some mathematicians allow an edge to be curved and some do not. Cheat Sheet 4 contains a range of formulas about 2d shapes: angles in a triangle; pythagoras' theorem; basic trigonometry laws; formulas for the circumference and area of a circle; formula for the length of an arc and the area of a sector; formulas for the area of a range of quadrilaterals. Cheat Sheet 5 contains a range of formulas about 3d shapes: surface area of a range of 3d shapes; volume of a range of 3d shapes. Take a look at some more of our worksheets similar to these. Here you will find a support page packed with a range of geometric formula. Included in this page are formula for: areas and volumes of 2d and 3d shapes interior angles of polygons angles of 2d shapes triangle formulas and theorems This page will provide a useful reference for anyone needing a geometric formula. Here you will find a support page to help you understand some of the special features that triangles have, particularly right triangles. Using this support page will help you to: understand the different types and properties of triangles; understand how to find the area of a triangle; know and use and apply Pythagoras' Theorem. All the free printable geometry worksheets in this i eracilpitlom id Āticapac el eracitarp a itratuia rep anigap atseuq ni oroval id ilgof itlom omaibbA .erfic 2 a enoizacilpitlom id oroval id ilgof id anigap artson allen itunevneB 2 anigaP .anigap ingo a odnof ni koobecaF id itnemmoc ied allesac allen oroval id ilgof ius o otis ortson lus itnemmoc i ittut a otunevneb li omaiD .acitametam id esrosir e ihcoig irtson irtla ilg ittut e itiutarg ilibapmats acitametam oroval id ilgof itseuq erazzilitu aiccaip it ehc onareps acitametam id erdnamalas eL !oroval id ilgof iout i etnemattefrep erapmats raf rep iggassap icilpmes 3 itseuq iugeS ?oiggatavlas li o apmats al noc otuia id ongosib onnah ilgof itseuq eravlas o erapmats emoC !oroval id ilgof iout i etnemattefrep erapmats raf rep iggassap icilpmes 3 itseuq iugeS ?oiggatavlas li o apmats al noc otuia id ongosib onnah ilgof itseuq eravlas o erapmats emoC .eter anu ad D3 amrof anu eraerc id ailgivarem al e otnemitrevid li atnemirepS ;inoisnemid e itnematneiro isrevid ni D3 emrof el erecsonocir ;eter anu ad D3 amrof anu eriurtsoC ;D3 emrof elled onretni'lla D2 emrof esrevid erecsonocir ;D3 emrof esrevid id Āteirporp el erecsonoc :a oilgif out Āretuia ilgof itseuq id osu'L .emeisni erenamir a eratuia rep edehcs aznes e noc ais elibinopsid ¨Ã otten oilgof ingO .erecsonoc ebbervod onibmab li ehc inumoc D3 emrof id iter onognetnoc ilibapmats itneuges I .D3 emrof el rep etiutarg iter id ammag artson al iarevort iuQ .eratnemele acitametam id kramhcneb i onatroppus enoizes atseuq ni ilibapmats airtemoeg id oroval id ilgof i ittuT D3 emrof id ammag anu inogilop iraloger inogilop ilaretalirdauq selgnairT :emrof itneuges el esulcni onos anigap atseuq nI .emrof ertla da ageIloc is emoc e ah amrof al ehc Āteirporp elled enoizircsed anu e enigammi aloccip anu ¨Ã amrof ingo noc osulcnI .ehcirtemoeg emrof esrevid id ocnele nu iarevort iuq ednamod ameroet arogatip ilognairt elumrof airtemoeG .eratnemele acitametam id kramhcneb i eratroppuS 2 digits for 1 or 2 digits. We divided the worksheets into two sections: 2 digit x 1 digit multiplication (3 degree) 2-digit multiplying (4 degree) each section ends with some more complicated challenge sheets for more capable enoizes atseuq ni itiutarg eratnemele azret id acitametam id oroval id ilgof i ittuT .enoizacilpitlom id imelborp id eires anu ivlosiR ;enoizacilpitlom id illedom isrevid erazzilitu e erednerpmoc ;01 x 01 a onif enoizacilpitlom id ellebat orol el erarapmi :a oilgif out Āretuia ilgof itseuq id osu'L .ellebat eut el noc otarucca e etneulf ¹Âip eratnevid a itratuia rep enoizacilpitlom id oroval id ilgof id eires anu iarevort iuQ .etsopsir id otelpmoc ,erapmats ad itazzilanosrep oroval id ilgof iout i eraerc id Ārettemrep it enoizacilpitlom id oroval id ilgof id erotareneg ortson lI ?ecilpmes e odipar odomâå ni iverb o ihgnul enoizacilpitlom id oroval id ilgof iout i eraerc id ongosib iaH .itseuq a ilimis oroval id ilgof irtson ied inucla da ataihcco'nu iad)iliciffid ¹Âip(arfic aippod a enoizacilpitlom id oroval id ilgof irtlA .anigap atseuq ni erfic 3 a erfic 2 a enoizacilpitlom id imelborp isulcni ,erfic 2 a enoizacilpitlom id oroval id ilgof ¹Âip omaibbA !artxe adifs alleuq id ongosib onnah ehc icapac ¹Âip itneduts reP itattegorp itats onos erfic 2 a enoizacilpitlom id oroval id ilgof itseuQ .0001 id idnarg ¹Âip etnemlareneg etsopsir e eracilpitlom ad erfic 2 a iliciffid ¹Âip iremun onnah 4 a 2 ad ilgoF .0001 a onif etsopsir e iloccip ¹Âip iremun noc erfic 2 a enoizacilpitlom rep erfic 2 a

eglovnioc 1 oilgof lI .eratnemele atrauq alla itlovir onos ilgof itseuQ !artxe adifs alleuq id ongosib onnah ehc icapac ¹Ãip itneduts rep itattegorp itats onos erfic 2 a enoizacilpitlom id oroval id ilgof itseuQ .iliciffid ¹Ãip ittodorp id acrecir al e erfic alognis a iremun rep erfic 2 a oremun nu id enoizacilpitlom al onacilpmi 6 a 3 ad ilgoF .5 o 4 ,3 ,2 rep erfic 2 a iremun onoglovnioc 2 e 1 ilgof I .imelborp 02 ad itiutitsoc onos 6 e 5 ilgof I ;imelborp 51 ad itiutitsoc onos 4 a 1 ad ilgoF .eratnemele azret id izret a itlovir onos ilgof itseuQ .ilicaf ¹Ãip ilgof i noc itacifissalc etnematnetta onos ilgof i ,enoizes ingo id onretni'llA orol orol li erappulivs a ehcna e 01x01 o 5x5 a enoizacilpitlom id ittaf orol i erarapmi a oilgif out Āretuia ihcoig itseuq id osu'L .enoizacilpitlom id ittaf orol i erarapmi a inibmab i eratuia rep itiutarg ilibapmats enoizacilpitlom id ihcoig id ammag anu iarevort iuQ .eratnemele azret al rep eratnemele acitametam id kramhcneb iad itamrofni and strategic thinking ability. multiple math games how to print or save these sheets you need help to print or save? follow these 3 simple steps to get your printed worksheets perfectly! How to print or save these sheets need help to print or save? follow these 3 simple steps to get your printed worksheets perfectly! math salamanders hope to be able to use these free printable math worksheets and all our other math games and resources. We welcome any comments on our site or worksheets on the facebook comment box at the bottom of each page. page.