Das ist Mathematik Servicemappe:
Ihr Mehrwert zum Schulbuch

Damit Sie Ihren Mathematikunterricht noch besser an die individuellen Bedürfnisse Ihrer Schülerinnen und Schüler anpassen können, haben wir für Sie praktische Zusatzmaterialien zum Fördern und Fordern zusammengestellt.

Überblick aller Materialien der Servicemappe:

Einfache Arbeitsblätter zum Fördern	Arbeitsblätter mit Plusaufgaben zum Fordern	Englischsprachige Arbeitsblätter
Passend zu den Online-Codes im Schulbuch	Passend zu den Online-Codes im Schulbuch	Passend zu jedem Kapitel im Schulbuch

Zusätzlich bieten wir Ihnen in **Lehrwerk-Online** nützliche Materialien und Informationen für die Unterrichtsvorbereitung und den Unterrichtseinsatz – und das alles kostenlos!

Sie finden dort:
- ✓ Arbeitsblätter
- ✓ Interaktive Übungen
- ✓ Schularbeitsvorschläge im Word-Format
- ✓ Jahresplanungen
- ✓ Lösungen zu den historischen Themenseiten

All diese Zusatzmaterialien finden Sie digital, schnell und direkt für alle Bände von *Das ist Mathematik*, indem Sie den jeweiligen Online-Code, der in Ihrem Schulbuch abgedruckt ist, im Suchfenster auf **www.oebv.at** eingeben.

TIPP: Viele weitere interaktive Übungen sowie interaktive Selbstkontrollen, Konstruktionsanleitungen als Video und interaktive GeoGebra-Applets finden Sie im E-Book+.

Entdecken Sie das gesamte Angebot auf
www.oebv.at/das-ist-mathematik

Das ist Mathematik 2

Arbeitsblätter ENGLISCH

- ✓ Aufgaben in englischer Sprache passend zu den Kapiteln von *Das ist Mathematik 2*
- ✓ Übersichtliches Vocabulary
- ✓ Genügend Platz zum Rechnen und Konstruieren
- ✓ Lösungen auf einem extra Blatt – so können Sie entscheiden, ob Sie diese den Schülerinnen und Schülern geben.

Englische Übungen zu Teilbarkeit

1. Why is 1 692 divisible by both 2 and 9?

2. Write the numbers as a product of their prime factors.
   a. 16 =
   b. 24 =
   c. 36 =
   d. 54 =
   e. 108 =
   f. 288 =
   g. 400 =

3. Find at least two number less than 100 with 3 different prime factors.

4. Jim and Lara are nurses. Jim works 3 days, then he has a day off. Lara works 2 days, then she has a day off. They both have a day off on July 4th.
   When do they have a day off together next?

Vokabulary

Englisch	Deutsch
place value	Stellenwert
divisable	teilbar
prime factor	Primfaktor
to have a day off	einen Tag frei haben
digit	Ziffer

Solutions

1. 1 692 is divisible by both 2 and 9 because the last digit is 2 and the sum of digits is divisible by 9.

2.
   a. $16 = 2 \cdot 2 \cdot 2 \cdot 2$
   b. $24 = 2 \cdot 2 \cdot 2 \cdot 3$
   c. $36 = 2 \cdot 2 \cdot 3 \cdot 3$
   d. $54 = 2 \cdot 3 \cdot 3 \cdot 3$
   e. $108 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3$
   f. $288 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$
   g. $400 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5$

3. $70 = 2 \cdot 5 \cdot 7$ or $2 \cdot 3 \cdot 5 = 30$ or $2 \cdot 3 \cdot 11 = 66$ (and other options)

4. The next day off for them together is July 16th.

Englische Übungen zu Bruchzahlen und Bruchrechnen

1. Calculate in your head.
   a. $\frac{2}{3}$ of 60 min =
   b. $\frac{7}{10}$ of 40 cm² =
   c. $2\frac{1}{2}$ of 6 kg =
   d. $1\frac{3}{4}$ of 1000 m =

2. Write down three fractions that equal 1.5.

3. Convert these decimals to fractions. At first into a fraction with a denominator of 10 or 100. Then simplify them if possible.
   a. 1.75 =
   b. 2.05 =
   c. 0.8 =
   d. 3.25 =

4. I am equivalent to $\frac{1}{2}$. The sum of my numerator and denominator is 15. What fraction am I?

5. Put these numbers in order, smallest first. $\frac{3}{4}, \frac{5}{6}, \frac{1}{2}, \frac{2}{3}, 0.7$

6. The fraction $\frac{38}{5}$ lies between the natural numbers ____ and ____. Circle the right answer.

   3 and 4 6 and 7 7 and 8 9 and 10

7. Find the results.

a. $\frac{3}{4} - \frac{1}{2} - \frac{1}{6} + \frac{5}{12} =$

b. $\frac{3}{4} - \left(\frac{1}{2} - \frac{1}{6}\right) + \frac{5}{12} =$

8.

a. Multiply the fraction $\frac{3}{5}$ by 10 and simplify.

b. Expand the fraction $\frac{3}{5}$ by 10.

9. Use mental arithmetic.

a. Alison solved $\frac{9}{10}$ of the multiple-choice questions correctly. If there were 50 multiple-choice questions, how many would she get right?

b. A Jupiter day is about $\frac{3}{8}$ of an Earth day. How many Earth hours are there in a Jupiter day?

10. 1 kg of tomatoes costs € 1.48. What does $1\frac{1}{2}$ kg of tomatoes cost?

11. Michael has 32 biscuits. He gives $\frac{3}{8}$ of the biscuits to his sister Jane. Generous Jane then gives $\frac{1}{4}$ of her share to a friend and eats the rest.

a. How many biscuits does Michael have left at the end?

b. How many biscuits does Jane eat?

Vocabulary

Englisch	Deutsch
calculate	berechnen
to equal	gleich sein
to convert	umwandeln
denominator	Nenner
to simplify a fraction	einen Bruch kürzen
to be equivalent	den gleichen Wert haben
numerator	Zähler
put in order	ordnen
to extend	erweitern
mental arithmetic	Kopfrechnen
about	ungefähr
share	Anteil, Teil

Solutions

1.

a. 40 min
b. 28 cm^2
c. 15 kg
d. 1750 m

2. $\frac{15}{10}, \frac{3}{2}, \frac{9}{6}$

3.

a. $\frac{175}{100} = \frac{7}{4} = 1\frac{3}{4}$
b. $\frac{205}{100} = \frac{41}{20} = 2\frac{1}{20}$
c. $\frac{8}{10} = \frac{4}{5}$
d. $\frac{325}{100} = \frac{13}{4} = 3\frac{1}{4}$

4. I am $\frac{5}{10}$.

5. $\frac{1}{2}, \frac{2}{3}, 0.7, \frac{3}{4}, \frac{5}{6}$

6. $\frac{38}{5}$ lies between 7 and 8.

7.

a. $\frac{1}{2}$
b. $\frac{5}{6}$

8.

a. 6
b. 30/50

9.

a. Alison would get 45 correct answers.
b. There are 9 hours in a Jupiter day.

10. 1 ½ kg of tomatoes costs 2.22 €.

11.

a. At the end Michael has 20 biscuits left.
b. Jane eats 9 biscuits.

Englische Übungen zu Prozentrechnung

1. Convert these percentages to fractions. Simplify if possible.

a. 80 % =
b. 3 % =
c. 25 % =
d. 96 % =
e. 10 % =
f. 20 % =
g. 15 % =

2. Convert the fractions and decimals to percentages and order the percentages, smallest first.

a. $\frac{3}{4}, \frac{3}{5}, 0.7$
b. $\frac{1}{5}, 0.15, \frac{1}{20}$
c. $\frac{7}{20}, 0.3, \frac{9}{25}$
d. $\frac{12}{16}, 0.75, \frac{4}{5}$

3. Convert the fractions to percentages. For these fractions you should know the decimal equivalent.

a. $\frac{1}{4}$
b. $\frac{7}{10}$
c. $\frac{1}{2}$
d. $\frac{7}{100}$
e. $\frac{3}{4}$
f. $\frac{1}{20}$
g. $\frac{2}{25}$

4. Complete the table.

	a)	b)	c)
percentage			45 %
fraction	$\frac{4}{5}$		
decimal		0.6	

5. A school has 880 pupils. 15 % of them take their bikes to school, 55 % go by bus and the rest walks.

a. How many children take their bikes?

b. How many children walk to school?

6. A clothing store is having a sale. All the clothes are reduced by 20 %. What is the sales price of a jacket that normally costs…
   a. … € 80 ?
   b. … € 24 ?

7. A bookshop had a sale. All books were reduced by 15 %. Alex bought an atlas for € 21.25. How much would it have been before the sale?

8. 30 % of a cake is left. This weighs 240 g. How much did the whole cake weigh?

9. What percentage could be used in each sentence?
   a. **One quarter** of the pupils at a school eat their lunch at home.
   b. **Four out of five** workers voted for a strike.
   c. Kathe got **18 out of 20** in the spelling quiz.
   d. **One of ten** mothers thinks children are too tidy at home.

Vocabulary

Englisch	Deutsch
percentage	Prozentsatz
fraction	Bruch
to simplify	kürzen
to convert	umformen
equivalent	Gleichwert
pupils	Schüler
to walk	zu Fuß gehen
to be reduced	verbilligt sein

Solutions

1.

a. 80 % = $\frac{4}{5}$
b. 3 % = $\frac{3}{100}$
c. 25 % = $\frac{1}{4}$
d. 96 % = $\frac{24}{25}$
e. 10 % = $\frac{1}{10}$
f. 20 % = $\frac{1}{5}$
g. 15 % = $\frac{3}{20}$

2.

a. 60%, 70%, 75%
b. 5 %, 15 %, 20 %
c. 30 %, 35 %, 36 %
d. 75 %, 75 %, 80 %

3.

a. $\frac{1}{4}$ = 25 % = 0.25
b. $\frac{7}{10}$ = 70 % = 0.7
c. $\frac{1}{2}$ = 50 % = 0.5
d. $\frac{7}{100}$ = 7 % = 0.07
e. $\frac{3}{4}$ = 75 % = 0.75
f. $\frac{1}{20}$ = 5 % = 0.05
g. $\frac{2}{25}$ = 8 % = 0.08

4.

	a)	b)	c)
percentage	80 %	60%	45%
fraction	4/5	3/5	9/20
decimal	0.8	0.6	0.45

5.

a. 132 children go by bike.
b. 264 children walk to school.

6.

a. The sale price of the jacket is € 64.
b. The sale price of the jacket is € 19.20.

7. The atlas was € 25 before the sale.

8. The whole cake did weigh 800 grams.

9.

a. 25 %
b. 80 %
c. 90 %
d. 10 %

Englische Übungen zu Gleichungen und Formeln

1. Solve the equations.
   a. p + 5 = 33

   b. y −12 = 2

   c. 8 · z = 72

   d. w : 9 = 13

2. There are 32 pupils in a class. There are 6 more boys than girls.
   How many girls are in the class?

3. The formula to calculate the costs of hiring a wedding car is c = 120 + 85•h.
   c are the costs in €, and h is the number of hours hired. Find the costs of hiring a car for…
   a. …4 hours.
   b. …8 hours.
   c. …6.5 hours.

4. Use the information to form an equation and then solve it to find the number.
   a. If we multiply a number by 5 and then subtract 3, the result is 9.

   b. If we double a number and add 10, the result is 30.

   c. If we divide a number by 2 and then add 3, the result is 8.

5. The total mass of three coins A, B and C is 33 g. Coin B is twice as heavy as coin A and coin C is 3 g heavier than coin B. Find the mass of coin A. Form an equation to solve the exercise.

6. The angles of a triangle are α, β and γ. β is twice as big as α and γ is 10° bigger than α. Find the size of angle α.
Note: The sum of the angles in a triangle is always 180°.

Vocabulary

Englisch	Deutsch
equation	Gleichung
to solve an equation	eine Gleichung lösen
formula	Formel
to hire	mieten
wedding car	Hochzeitsauto
to form an equation	eine Gleichung aufstellen
angle	Winkel
sum of the angles	Winkelsumme

Solutions

1.

a. p = 28
b. y = 14
c. z = 9
d. w = 117

2. There are 13 girls in the class.

3.

a. To hire a car for 4 hours costs € 460.
b. To hire a car for 8 hours costs € 800.
c. To hire a car for 6.5 hours costs € 672.50.

4.

a. $5x - 3 = 9$; $x = 2.4$
b. $2x + 10 = 30$; $x = 10$
c. $x/2 + 3 = 8$; $x = 10$

5. x … mass of coin A
$x + 2x + (2x + 3) = 33$
The mass of coin A is 6 grams.

6. x … size of angle α
$x + 2x + (x + 10) = 180$
The size of angle α is 42.5°.

Englische Übungen zu Direkte und indirekte Proportionalität

1. A train travels 40 km in 120 min.
   If the train continues at the same speed, how long will it take the train to travel 55 km?

2. A car travels 280 km on 35 l of petrol. How much petrol is needed for a journey of 440 km?

3. To prepare a meal for 4 people, 500 g of potatoes are needed.
   a. How many grams of potatoes are needed for 7 people?

   b. How many people could eat this meal if it was made with 1 250 g of potatoes?

4. How much do two cakes cost if seven cakes cost € 10.50?

5. A machine fills 1 000 bottles in 5 min. How many bottles does it fill in 2 min?

6. A printer prints 12 pages in 2 min. How many pages will it print in 5 min?

7. It takes 4 men 10 hours to build a wall. How many men are needed to build a wall twice as big in 10 hours?

8. Alan swam 200 m in 2 min 5 s. What was his speed in metres per second?

9. Sound travels at approximately 330 m/s.

a. How far away is the thunderstorm if you count 6.5 s between seeing the lightning and hearing the thunder?

b. If it takes 3.4 s to hear an echo, how far away is the cliff?

10. Pam made a deal with her mother. If Pam could mow the lawn in 1 hour or less, she would get paid double. In 45 min, she had mowed $\frac{7}{10}$ of the lawn. If she continues to mow at the same rate, will she finish mowing the lawn in time to be paid double?

11. Change this cake recipe for 4 people to a recipe for 9 people.

a. 320 g mixed fruit
b. 380 g flour
c. 80 g butter
d. 40 g yeast
e. 200 ml milk
f. 4 eggs
g. 140 g sugar

Vocabulary

Englisch	Deutsch
to travel	fahren
speed	Geschwindigkeit
petrol	Benzin
journey	Reise
weight	Gewicht
velocity	Geschwindigkeit
space	Raum, Weg
time	Zeit
yeast	Germ, Hefe
to mow the lawn	den Rasen mähen
twice as	doppelt so viel wie

Solutions

1. It will take 165 min to travel 55 km.

2. There are 55 l of petrol needed for a journey of 440 km.

3. A meal for 4 people needs 500 g of potatoes.
   a. There are 875 g of potatoes needed for 7 people.
   b. There are enough potatoes for 10 people.

4. Two cakes cost € 3.

5. The machine fills 400 bottles in 2 min.

6. The computer printer will print 30 pages in 5 min.

7. 8 men are needed to build this wall.

8. His speed was 1.6 m/s.

9. Sound travels at approximately 330 m/s.
   a. The thunderstorm is 2 145 m away.
   b. The cliff is 561 m away.

10. No, because she will need more than 64 min (64,2…).

11. Change this cake recipe for 4 people to a recipe for 9 people.
    a. 720 g mixed fruit
    b. 855 g flour
    c. 180 g butter
    d. 90 g yeast
    e. 450 ml milk
    f. 9 eggs
    g. 315 g sugar

Englische Übungen zu Statistik – verschiedene Darstellungen

1. A dice is thrown. The thrown numbers are listed below.

a. What is the frequency of each number?

b. Calculate the relative frequency of each number in %.

3	5	6	1	5	1	3
6	5	4	2	4	3	3
5	1	4	6	2	5	

2. Find the mean, the median und the mode of the set of data.

a. 10, 14, 14, 14, 15, 16, 18

b. 5, 5, 20, 20, 20, 23, 26, 29, 31, 31, 31, 35

c. 4999, 5000, 5001, 5002, 5003

3. Decide, if the mean, median or the mode of this set of data is a meaningful value.
   a. Favourite sport of a group of friends: football, tennis, football, ice skating, skiing, football, skiing, ice hockey
   b. Weight of a new born baby: 3100 g, 3050 g, 3180 g, 3220 g

Vocabulary

Englisch	Deutsch
frequency	absolute Häufigkeit
relative frequency	relative Häufigkeit
set of data	Datenreihe
mean	arithmetisches Mittel
mode	Modus
median	Median
meaningful value	sinnvoller Wert
to throw a dice	einen Würfel werfen
listed	aufgelistet

Solutions

1.

number	frequency	percentage frequency
1	3	15 %
2	2	10 %
3	4	20 %
4	3	15 %
5	5	25 %
6	3	15 %

2.

a. mean:14.43; mode: 14; median: 14
b. mean: 23; mode: 20, 31; median: 24.5
c. mean: 5001; mode: none; median. 5001

3.

a. The mean makes no sense, the median either. The mode is football. It means that football is the favourite sport of the whole group.
b. The mean 3137.5 g makes sense. The median is 3140 g and shows the central value. The mode makes no sense, because no value occurs more than one time.

Englische Übungen zu Winkel, Koordinaten und Symmetrie

1. Construct the angles α = 77° and β = 48°.
   a. Construct the angle $\gamma = \alpha + \beta$ using your compasses but without using a protractor.
   b. Construct the angle $\delta = 2 \cdot \alpha - 3 \cdot \beta$ using your compasses but without using a protractor.

2. Draw the angle a) $\alpha = 67°$, b) $\beta = 123°$ and construct an angle of the same size with legs that are perpendicular to the legs of the given angle.

3. Plot the points A = (8 | 4), B = (7 | 7) and C = (2 | 5) into a coordinate system and connect them. What is the size of the angle
   a. ∢ ABC,
   b. ∢ BCA,
   c. ∢ CAB?

4. A square ABCD is given by its vertices A = (0 | 1), B = (3 | 1) and D = (0 | 4).
   a. Draw the square in a system of coordinates.
   b. Write down the coordinates of the vertex C.
   c. Reflect the square across the straight line g[I(5 | 0), II(5 | 6)].
   d. Write down the coordinates of the reflected vertices of the square.

5. Draw the line segment AB with A = (3 | 4) and B = (8 | 7) in a system of coordinates.

a. Construct the perpendicular bisector s_{AB}.

6. Draw the angle $\alpha = \sphericalangle$ ASB with A = (0 | 8), B = (3 | 6) and S = (1 | 2).

a. How many degrees does the angle α have?

b. Construct its angle bisector w_α.

7. Construct without using a protractor.

a. $\alpha = 60°$
b. $\beta = 105°$
c. $\gamma = 150°$
d. $\delta = 225°$

8. Draw the angle $\alpha = \sphericalangle$ ASB with A = (1 | 8), B = (3 | 2) and S = (7 | 6).

a. How many degrees does the angle α have?
b. Construct its angle bisector w_α.
c. Draw the line segment PQ with P(5 | 1) and Q(8 | 4) in the same system of coordinates.
d. Construct the perpendicular bisector s_{PQ}.
e. What are the coordinates of the point of intersection of w_α and s_{PQ}?

Vocabulary

Englisch	Deutsch
angle	Winkel
to construct	konstruieren
compasses	Zirkel
protractor	Winkelmesser
size	Größe
legs of an angle	Winkelschenkel
perpendicular to	normal zu
to plot	zeichnen
coordinate system	Koordinatensystem
to connect	verbinden
size	Größe
square	Quadrat
vertex (vertices)	Eckpunkt(e)
to draw	zeichnen
to reflect across	spiegeln an
straight line	Gerade
line segment	Strecke
perpendicular bisector	Streckensymmetrale
degree	Grad
angle bisector	Winkelsymmetrale

Solutions

1. Construct the angles $\alpha = 77°$ and $\beta = 48°$.
   a. $\gamma = 125°$
   b. $\delta = 10°$

2. Work properly!

3. a) $\sphericalangle$ ABC = 87° b) $\sphericalangle$ BCA = 31° c) $\sphericalangle$ CAB = 62°

4. A square ABCD is given by its vertices A = (0 | 1), B = (3 | 1) and D = (0 | 4).
   a. Work properly!
   b. C (3|4)
   c. Work properly!
   d. A_1 = (10|1), B_1 = (7|1), C_1 = (7|4), D_1 = (10|4)

5. The bisectors cross in H = (5.5|5.5).

6. a) $\alpha = 36°$

7. Construct without using a protractor.
   a. See the solution to task 845.
   b. $105° = 12 \cdot 90° + 60°$
   c. $150° = 2 \cdot 60° + 12 \cdot 60°$
   d. $225° = 180° + 12 \cdot 90°$

8. Draw the angle $\alpha = \sphericalangle$ ASB with A = (1 | 8), B = (3 | 2) and S = (7 | 6).
   a) $\alpha = 63°$
   b) (3|5) is a point of w_α.
   d) (6.5|2.5) is a point of s_{PQ}
   e) The point of intersection is (3.8|5.2)

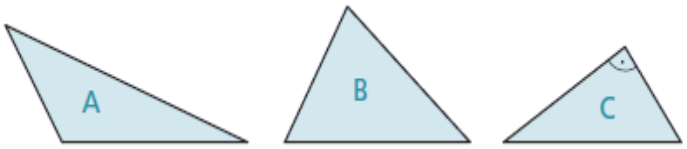
Englische Übungen zu Dreiecke

1. Which of the following triangles A, B, C has

a. three acute angles,

b. one obtuse angle,

c. one right angle?



2. Calculate the size of the third angle of a right-angled triangle ABC with $\gamma = 90°$!

a. $\alpha = 64°$

b. $\beta = 49°$

c. $\alpha = 34°$

d. $\beta = 74.5°$

e. $\alpha = 45.25°$

3. A triangle ABC is given by a = 8.5 cm, b = 4.6 cm and c = 12.3 cm. Construct the triangle and calculate the perimeter.

4. A triangle ABC is given by one side and two angles. Construct the triangle and measure the third angle. Check your construction by calculating the sum of the three angles.
   a. c = 6.5 cm, $\alpha = 49°, \beta = 77°$
   b. b = 12.9 cm, $\alpha = 39°, \gamma = 52°$

5. A triangle ABC is given by two sides and the angle between these sides. Construct the triangle. Check your triangle by measuring the angles and calculating their sum.
   a. a = 7.5 cm, c = 10.8 cm, $\beta = 65°$
   b. a = 8.9 cm, b = 6.1 cm, $\gamma = 112°$

6. Construct a triangle ABC with b = 4.7 cm, c = 7.2 cm, α = 37°. Draw the incircle.

7. Construct a triangle ABC with a = 4.7 cm, β = 62°, γ = 57°. Draw the angle bisectors w_α, w_β and w_γ.

8. A triangle ABC is given by a = 6.7 cm, b = 8.2 cm, c = 7.4 cm.
Construct the triangle and draw the altitudes h_a, h_b and h_c.

9. A triangle ABC is given by a = 5.6 cm, c = 8.1 cm and $\beta = 72°$.
Construct the three altitudes and their point of intersection, the so called orthocentre.

10. A triangle ABC is given by the coordinates of its vertices: A = (2 | 2), B = (12 | 3), C = (3 | 10)

a. Find the coordinates of the circumcentre.
b. Find the coordinates of the incentre.
c. Find the coordinates of the centroid.
d. Find the coordinates of the orthocentre.

11. Construct an isosceles triangle ABC with a = b.

a. a = 6.5 cm, c = 9.2 cm. Draw the perpendicular bisectors of the three sides.
b. c = 10.5, α = 37°. Draw the three angle bisectors of the triangle.
c. a = 7.8 cm, α = 66°. Draw the three medians of the triangle.
d. a = 5.4 cm, γ = 110°. Draw the three altitudes of the triangle.

12. Construct the equilateral triangle with a = 6.4 cm and the three axes of symmetry.

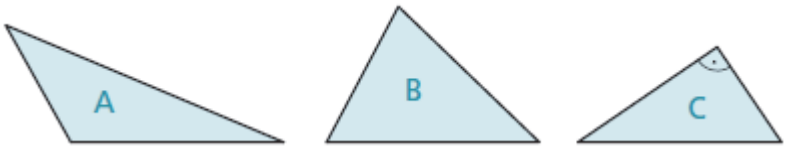
Vocabulary

Englisch	Deutsch
acute angle	spitzer Winkel
obtuse angle	stumpfer Winkel
right angle	rechter Winkel
right-angled triangle	rechtwinkliges Dreieck
perimeter	Umfang
to measure	messen
to prove	überprüfen
sum	Summe
to construct	konstruieren
triangle	Dreieck
to draw	zeichnen
incircle	Innkreis
angle bisector	Winkelsymmetrale
altitude	Höhe
point of intersection	Schnittpunkt
orthocentre	Höhenschnittpunkt
coordinate	Koordinate
vertex (vertices)	Eckpunkt(e)
circumcentre	Umkreismittelpunkt
incentre	Innkreismittelpunkt
centroid	Schwerpunkt
isosceles triangle	gleichschenkliges Dreieck
perpendicular bisector	Streckensymmetrale
median	Schwerlinie
equilateral triangle	gleichseitiges Dreieck
axis (axes) of symmetrie	Symmetrieachse(n)

Solutions

1. Which of the following triangles A, B, C has

a. three acute angles, = B
b. one obtuse angle, = A
c. one right angle? = C



2. Calculate the size of the third angle of a right-angled triangle ABC with γ = 90°!

a. β = 26°
b. α = 41°
c. β = 56°
d. α = 15.5°
e. β = 44.25°

3. α = 27°, u = 25.4 cm

4.

a. γ = 54°
b. β = 89°

5.

a. b = 10.2 cm, $\alpha = 42°, \gamma = 73°$
b. c = 12.5 cm, $\alpha = 41°, \beta = 27°$

6. r = 1.3 cm

7. Compare with page 206 in your book!
w_α = 4.0 cm, w_β = 3.9 cm, w_γ = 4.1 cm

8. h_a = 7.0, h_b = 5.7, h_c = 6.3 cm

9. h_a = 7.7, h_b = 5.2, h_c = 5.4 cm

10.

a. U = (6.7|5.5) b. I = (5|5) c. S = (5.7|5) d. H = (3.6|4)

11.

a. α = 45°
b. $w_\alpha = w_\beta$ = 7.7 cm, w_γ = 4.0 cm
c. c = 6.3 cm
d. c = 8.8 cm

12. Compare with page 216 in your book!

Englische Übungen zu Vierecken und Vielecken

1. A parallelogram ABCD is given by a = 6.2 cm, f = 7.6 cm and α = 41°.
   Construct the parallelogram and the angle bisectors of all four angles.

2. A rhombus ABCD is given by a = 7.8 cm and e = 10.5 cm.
   Construct the rhombus, draw the second diagonal f and calculate the area of the rhombus.

3. Construct the trapezoid (trapezium) ABCD with a = 9.2 cm, b = 3.4 cm, e = 7.2 cm, α = 56°.

4. An isosceles trapezoid ABCD is given by a = 7.1 cm, e = 7.6 cm and α = 71°. Construct the trapezoid and draw its axis of symmetry. Calculate the area of the trapezoid.

5. A kite ABCD is given by a = 6.4 cm, b = 8.0 cm, e = 10.8 cm.

a. Construct the kite.

b. Calculate the area of the kite.

c. Draw the incircle and write down its radius.

6. Construct the regular hexagon ABCDEF with a = 5.8 cm. How many diagonals does the hexagon have?

7. Construct the regular octogon ABCDEFGH with the circumradius r = 5.8 cm.

8. Construct a regular polygon with

a. 5 sides,
b. 9 sides,
c. 10 sides,
d. 12 sides.

Start with the circumcircle of the polygon (radius r = 5 cm).

Vocabulary

Englisch	Deutsch
parallelogram	Parallelogramm
angle bisector	Winkelsymmetrale
rhombus	Rhombus, Raute
diagonal	Diagonale
area	Flächeninhalt
to measure	messen
trapezoid (or trapezium)	Trapez
isosceles trapezoid	gleichschenkliges Trapez
axis of symmetry	Symmetrieachse
kite	Deltoid, Drachenviereck
incircle	Innkreis
regular hexagon	regelmäßiges Sechseck
regular octogon	regelmäßiges Achteck
circumradius	Umkreisradius
regular polygon	regelmäßiges Vieleck
circumcircle	Umkreis

Solutions

1. Check your construction by measuring b: b = 11.1 cm

2. Check your construction by measuring f: f = 11.5 cm
   A ≈ 60 cm^2 (60.375)

3. Check your construction by measuring β: β = 45°

4. c = 3.3, h = 5.5 cm, A = 28.6 cm^2

5. A kite ABCD is given by a = 6.4 cm, b = 8.0 cm, e = 10.8 cm.
   a. f = 9.4 cm
   b. A = 50.76 cm^2
   c. r = 3.5 cm

6. The hexagon has three diagonals.

7. Compare with page 240!

8. Compare with the solution to task 941!

Englische Übungen zu Prisma

1. Calculate 1) the volume and 2) the surface area of the given geometric solid.
   a. Cube: a = 5.4 cm

   b. Cuboid: a = 4.7 cm, b = 3.4 cm, c = 2.5 cm

2. The base of a right prism is a right-angled triangle. Its legs are a = 7.4 cm and b = 4.2 cm long.
   The height of the prism is h = 12.0 cm. Calculate the volume of the prism.

Vocabulary

Englisch	Deutsch
volume	Rauminhalt, Volumen
surface area	Oberfläche
geometric solid	geometrischer Körper
cube	Würfel
cuboid	Quader
base	Grundfläche
right prism	gerades Prisma
right-angled triangle	rechtwinkliges Dreieck
legs (of a right-angled triangle)	Katheten
height	Höhe

Solutions

1.

a. 1) V ≈ 157 cm^3 (157.464) 2) O ≈ 175 cm^2 (174.96)

b. 1) V ≈ 40 cm^3 (39.95) 2) O ≈ 72.5 cm^2 (72.46)

2. V ≈ 186.5 cm^3 (186.48)