

## Nine-Point Center

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**Abstract.** By using the computer program "Machine for Questions and Answers", we find properties of the Nine-Point Center.

Given a point, the Machine for Questions and Answers produces theorems related to properties of the point. The Machine for Questions and Answers produces theorems related to properties of the Nine-Point Center:

Nine-Point Center = Circumcenter of the Orthic Triangle.

Nine-Point Center = Circumcenter of the Pedal Triangle of the Circumcenter.

Nine-Point Center = Circumcenter of the Pedal Triangle of the Orthocenter.

Nine-Point Center = Circumcenter of the Euler Triangle.

Nine-Point Center = Circumcenter of the Feuerbach Triangle.

Nine-Point Center = Nine-Point Center of the Fuhrmann Triangle.

Nine-Point Center = Nine-Point Center of the Johnson Triangle.

Nine-Point Center = Center of the Nine-Point Circle.

Nine-Point Center = Center of the Second Droz-Farny Circle of the Medial Triangle.

Nine-Point Center = Center of the Circumcircle of the Orthic Triangle.

Nine-Point Center = Center of the Second Droz-Farny Circle of the Orthic Triangle.

Nine-Point Center = Center of the Circumcircle of the Pedal Triangle of the Circumcenter.

Nine-Point Center = Center of the Second Droz-Farny Circle of the Pedal Triangle of the Circumcenter.

Nine-Point Center = Center of the Circumcircle of the Pedal Triangle of the Orthocenter.

Nine-Point Center = Center of the Second Droz-Farny Circle of the Pedal Triangle of the

Orthocenter.

Nine-Point Center = Center of the Circumcircle of the Euler Triangle.

Nine-Point Center = Center of the Second Droz-Farny Circle of the Euler Triangle.

Nine-Point Center = Center of the Circumcircle of the Feuerbach Triangle.

Nine-Point Center = Center of the Second Droz-Farny Circle of the Feuerbach Triangle.

Nine-Point Center = Center of the Nine-Point Circle of the Fuhrmann Triangle.

Nine-Point Center = Center of the Nine-Point Circle of the Johnson Triangle.

Nine-Point Center = Center of the Inner Apollonius Circle of the Excircles.

Nine-Point Center = Center of the Inner Apollonius Circle of the Excircles of the Fuhrmann Triangle.

Nine-Point Center = Center of the Inner Apollonius Circle of the Excircles of the Johnson Triangle.

Nine-Point Center = Center of the Outer Apollonius Circle of the Mixtilinear Incircles of the Orthic Triangle.

Nine-Point Center = Center of the Outer Apollonius Circle of the Mixtilinear Incircles of the Pedal Triangle of the Orthocenter.

Nine-Point Center = Center of the Outer Apollonius Circle of the Mixtilinear Incircles of the Feuerbach Triangle.

Nine-Point Center = Center of the Inner Apollonius Circle of the Triad of the Incircles of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Center of the Inner Apollonius Circle of the Triad of the Moses Circles of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Midpoint between the Circumcenter and the Orthocenter.

Nine-Point Center = Midpoint between the Fuhrmann Center and the Incenter.

Nine-Point Center = Midpoint between the Orthocenter of the Tangential Triangle and the Prasolov Point.

Nine-Point Center = Midpoint between the Center of the Orthocentroidal Circle and the Centroid.

Nine-Point Center = Midpoint between the Midpoint of the Incenter and the Orthocenter and the Spieker Center.

Nine-Point Center = Midpoint between the Midpoint of the Gergonne Point and the Orthocenter and the Mittenpunkt.

Nine-Point Center = Midpoint between the Midpoint of the Orthocenter and the Symmedian Point and the Symmedian Point of the Medial Triangle.

Nine-Point Center = Midpoint between the Midpoint of the Orthocenter and the Spieker Center and the Complement of the Spieker Center.

Nine-Point Center = Midpoint between the Midpoint of the Mittenpunkt and the Orthocenter and the Complement of the Mittenpunkt.

Nine-Point Center = Reflection of the Circumcenter in the Complement of the Nine-Point Center.

Nine-Point Center = Product of the Centroid and the Nine-Point Center.

Nine-Point Center = Product of the Centroid of the Orthic Triangle and the Isotomic Conjugate of the Symmedian Point.

Nine-Point Center = Product of the Symmedian Point of the Anticomplementary Triangle and the Symmedian Point of the Orthic Triangle.

Nine-Point Center = Inverse of the Circumcenter in the Orthocentroidal Circle.

Nine-Point Center = Inverse of the Circumcenter in the Circumcircle of the Fourth Brocard Triangle.

Nine-Point Center = Inverse of the Orthocenter in the Orthocentroidal Circle of the Johnson Triangle.

Nine-Point Center = Internal Center of Similitude of the First Droz-Farny Circle and the Second Droz-Farny Circle.

Nine-Point Center = Radical Center of the Triad of the Nine-Point Circles of the Corner Triangles of the Anticevian Triangle of the Centroid.

Nine-Point Center = Perspector of the Cevian Triangle of the Nine-Point Center and the Circumcevian Triangle of the Nine-Point Center.

Nine-Point Center = Homothetic Center of the Medial Triangle and the Euler Triangle.

Nine-Point Center = Perspector of the Cevian Triangle of the Nine-Point Center and the Johnson Triangle.

Nine-Point Center = Perspector of the Anticevian Triangle of the Nine-Point Center and the Circumcevian Triangle of the Nine-Point Center.

Nine-Point Center = Perspector of the Excentral Triangle and the Feuerbach Triangle.

Nine-Point Center = Perspector of the Anticevian Triangle of the Nine-Point Center and the Johnson Triangle.

Nine-Point Center = Homothetic Center of the Pedal Triangle of the Circumcenter and the Euler Triangle.

Nine-Point Center = Perspector of the Antipedal Triangle of the Incenter and the Feuerbach Triangle.

Nine-Point Center = Perspector of the Circumcevian Triangle of the Nine-Point Center and the Johnson Triangle.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the Centroids of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the Circumcenters of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the de Longchamps Points of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the Schiffler Points of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the Exeter Points of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the Far-Out Points of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the Gibert Points of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the Centers of the Orthocentroidal Circles of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the Skordev Points of the Triangulation Triangles of the Orthocenter.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the Nine-Point Centers of the Corner Triangles of the Centroid.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the Kosnita Points of the Corner Triangles of the Orthocenter.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the Circumcenters of the Anticevian Corner Triangles of the Centroid.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the

Orthocenters of the Anticevian Corner Triangles of the Symmedian Point.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the reflections of the Kosnita Point in the sides of the Excentral Triangle.

Nine-Point Center = Homothetic Center of Triangle ABC and the Triangle of the reflections of the Circumcenter in the vertices of the Medial Triangle.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the reflections of the Nine-Point Center in the vertices of the Cevian Triangle of the Nine-Point Center.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the reflections of the Nine-Point Center in the vertices of the Anticevian Triangle of the Nine-Point Center.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the reflections of the vertices of the Cevian Triangle of the Nine-Point Center in the Nine-Point Center.

Nine-Point Center = Perspector of Triangle ABC and the Triangle of the reflections of the vertices of the Anticevian Triangle of the Nine-Point Center in the Nine-Point Center.

Nine-Point Center = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Cevian Triangle of the Nine-Point Center.

Nine-Point Center = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Anticevian Triangle of the Nine-Point Center.

Nine-Point Center = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Circumcevian Triangle of the Nine-Point Center.

Nine-Point Center = Homothetic Center of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Johnson Triangle.

Nine-Point Center = Complement of the Circumcenter.

Nine-Point Center = Complement of the Complement of the Orthocenter.

Nine-Point Center = Isogonal Conjugate of the Kosnita Point.

Nine-Point Center = Complement of the Isogonal Conjugate of the Orthocenter.

Nine-Point Center = Complement of the Orthocenter of the Medial Triangle.

Nine-Point Center = Anticomplement of the Nine-Point Center of the Medial Triangle.

Nine-Point Center = Isogonal Conjugate of the Anticomplement of the Kosnita Point of the Medial Triangle.

Nine-Point Center = Complement of the Isogonal Conjugate of the de Longchamps Point of the Medial Triangle.

Nine-Point Center = Isotomic Conjugate of the Isogonal Conjugate of the Centroid of the Orthic Triangle.

The Nine-Point Center lies on the Brocard Circle of the Medial Triangle.

The Nine-Point Center lies on the Brocard Circle of the Orthic Triangle.

The Nine-Point Center lies on the Brocard Circle of the Pedal Triangle of the Circumcenter.

The Nine-Point Center lies on the Brocard Circle of the Pedal Triangle of the Orthocenter.

The Nine-Point Center lies on the Brocard Circle of the Euler Triangle.

The Nine-Point Center lies on the Brocard Circle of the Feuerbach Triangle.

The Nine-Point Center lies on the Nine-Point Circle of the First Brocard Triangle.

The Nine-Point Center lies on the Nine-Point Circle of the Inner Gallatly-Kiepert Triangle.

The Nine-Point Center lies on the Inner Apollonius Circle of the Excircles of the First Brocard Triangle.

The Nine-Point Center lies on the Inner Apollonius Circle of the Excircles of the Inner Gallatly-Kiepert Triangle.

The Nine-Point Center lies on the Line through the Incenter and the Second Feuerbach Point.

The Nine-Point Center lies on the Line through the Incenter and the Johnson Midpoint.

The Nine-Point Center lies on the Line through the Centroid and the Circumcenter.

The Nine-Point Center lies on the Line through the Centroid and the Orthocenter.

The Nine-Point Center lies on the Line through the Centroid and the de Longchamps Point.

The Nine-Point Center lies on the Line through the Centroid and the Exeter Point.

The Nine-Point Center lies on the Line through the Centroid and the Schiffler Point.

The Nine-Point Center lies on the Line through the Centroid and the Gibert Point.

The Nine-Point Center lies on the Line through the Centroid and the Skordev Point.

The Nine-Point Center lies on the Line through the Circumcenter and the Orthocenter.

The Nine-Point Center lies on the Line through the Circumcenter and the de Longchamps Point.

The Nine-Point Center lies on the Line through the Circumcenter and the Exeter Point.

The Nine-Point Center lies on the Line through the Circumcenter and the Schiffler Point.

The Nine-Point Center lies on the Line through the Circumcenter and the Gibert Point.

The Nine-Point Center lies on the Line through the Circumcenter and the Skordev Point.

The Nine-Point Center lies on the Line through the Orthocenter and the de Longchamps Point.

The Nine-Point Center lies on the Line through the Orthocenter and the Schiffler Point.

The Nine-Point Center lies on the Line through the Orthocenter and the Skordev Point.

The Nine-Point Center lies on the Line through the First Feuerbach Point and the Incenter.

The Nine-Point Center lies on the Line through the First Feuerbach Point and the Second Feuerbach Point.

The Nine-Point Center lies on the Line through the First Feuerbach Point and the Fuhrmann Center.

The Nine-Point Center lies on the Line through the First Feuerbach Point and the Johnson Midpoint.

The Nine-Point Center lies on the Line through the Inner Fermat Point and the Outer Napoleon Point.

The Nine-Point Center lies on the Line through the Inner Napoleon Point and the Outer Fermat Point.

The Nine-Point Center lies on the Line through the Exeter Point and the Orthocenter.

The Nine-Point Center lies on the Line through the Exeter Point and the de Longchamps Point.

The Nine-Point Center lies on the Line through the Exeter Point and the Schiffler Point.

The Nine-Point Center lies on the Line through the Exeter Point and the Gibert Point.

The Nine-Point Center lies on the Line through the Exeter Point and the Skordev Point.

The Nine-Point Center lies on the Line through the Schiffler Point and the de Longchamps Point.

The Nine-Point Center lies on the Line through the Schiffler Point and the Skordev Point.

The Nine-Point Center lies on the Line through the Gibert Point and the Orthocenter.

The Nine-Point Center lies on the Line through the Gibert Point and the de Longchamps Point.

The Nine-Point Center lies on the Line through the Gibert Point and the Schiffler Point.

The Nine-Point Center lies on the Line through the Gibert Point and the Skordev Point.

The Nine-Point Center lies on the Line through the Brocard Midpoint and the Kiepert Center.

The Nine-Point Center lies on the Line through the Prasolov Point and the Symmedian Point.

The Nine-Point Center lies on the Line through the Kiepert-Parry Point and the Kosnita Point.

The Nine-Point Center lies on the Line through the Fuhrmann Center and the Incenter.

The Nine-Point Center lies on the Line through the Fuhrmann Center and the Second Feuerbach Point.

The Nine-Point Center lies on the Line through the Fuhrmann Center and the Johnson Midpoint.

The Nine-Point Center lies on the Line through the Outer Vecten Point and the Symmedian Point.

The Nine-Point Center lies on the Line through the Outer Vecten Point and the Prasolov Point.

The Nine-Point Center lies on the Line through the Inner Vecten Point and the Symmedian Point.

The Nine-Point Center lies on the Line through the Inner Vecten Point and the Prasolov Point.

The Nine-Point Center lies on the Line through the Inner Vecten Point and the Outer Vecten Point.

The Nine-Point Center lies on the Line through the Johnson Midpoint and the Second Feuerbach Point.

The Nine-Point Center lies on the Line through the Skordev Point and the de Longchamps Point.

### **Invitation**

The reader is invited to submit a note/paper containing

- synthetic proofs of theorems from this paper,



- or, applications of theorems from this paper,
- or, additional references related to this paper.

## Definitions and Conventions

We use the definitions and conventions in accordance with [1 - 6] and papers published in this journal.

## The Level

The Machine for Questions and Answers is used to produce results in this paper. Currently the Machine has 6 levels of depths - 0,1,2,3,4,5. We use for this paper the level 0, that is, the Machine produces only elementary results. If we need deeper investigation, we have to use a level bigger than 0. Since the Machine for Questions and Answers produces too many results, it is suitable we to use bigger levels upon request, that is, for specific questions.

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